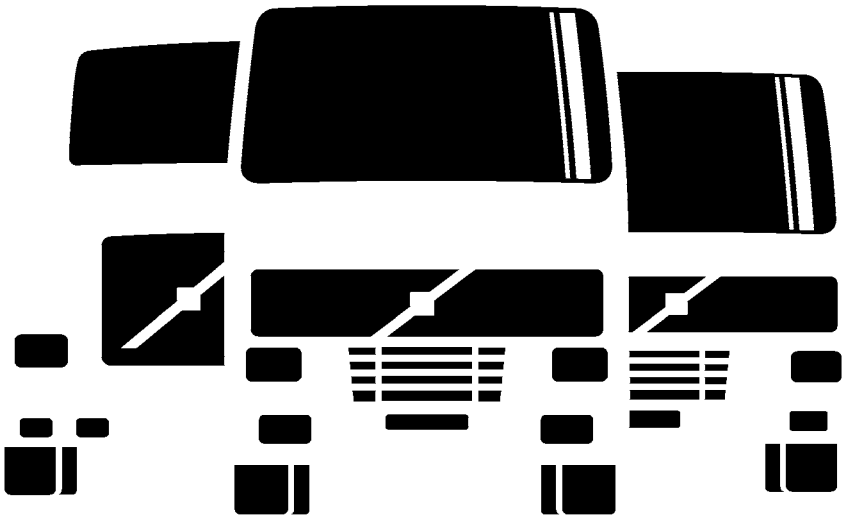
Service Manual Trucks

Group **810–500**

Cab, Body Repair

VN, VHD



PV776-TSP145522

VOLVO

Foreword

The descriptions and service procedures contained in this manual are based on designs and methods studies carried out up to November 2000.

The products are under continuous development. Vehicles and components produced after the above date may therefore have different specifications and repair methods. When this is believed to have a significant bearing on this manual, supplementary service bulletins will be issued to cover the changes.

The new edition of this manual will update the changes.

In service procedures where the title incorporates an operation number, this is a reference to an S.R.T. (Standard Repair Time).

Service procedures which do not include an operation number in the title are for general information and no reference is made to an S.R.T.

The following levels of observations, cautions and warnings are used in this Service Documentation:

Note: Indicates a procedure, practice, or condition that must be followed in order to have the vehicle or component function in the manner intended.

Caution: Indicates an unsafe practice where damage to the product could occur.

Warning: Indicates an unsafe practice where personal injury or severe damage to the product could occur.

Danger: Indicates an unsafe practice where serious personal injury or death could occur.

Volvo Trucks North America, Inc.
Greensboro, NC USA

Order number: PV776-TSP145522

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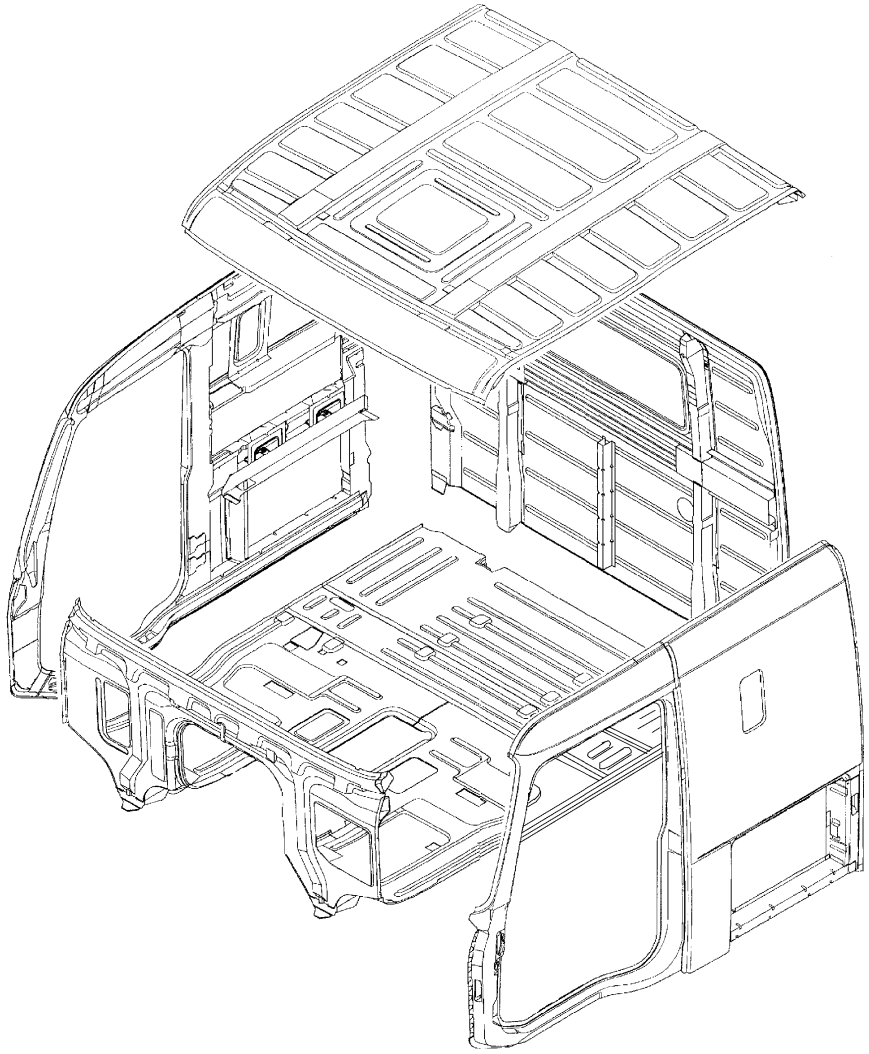
Feedback

Operation Numbers

General

Cab Body



W8001801

This service manual covers the repair or replacement of body panels for VN-series cabs, which includes day-cab/VHD, sleeper cabs 420, 610, 660 and 770.

Additional information for working in and around the cab can be found in the Service Information Manuals in Group 8. These include Cab General, Cab Doors and Cab Glass; Cab Suspension; Cab Upholstery; Climate Control; Cab, Interior Equipment, and Supplemental Restraint System (SRS).

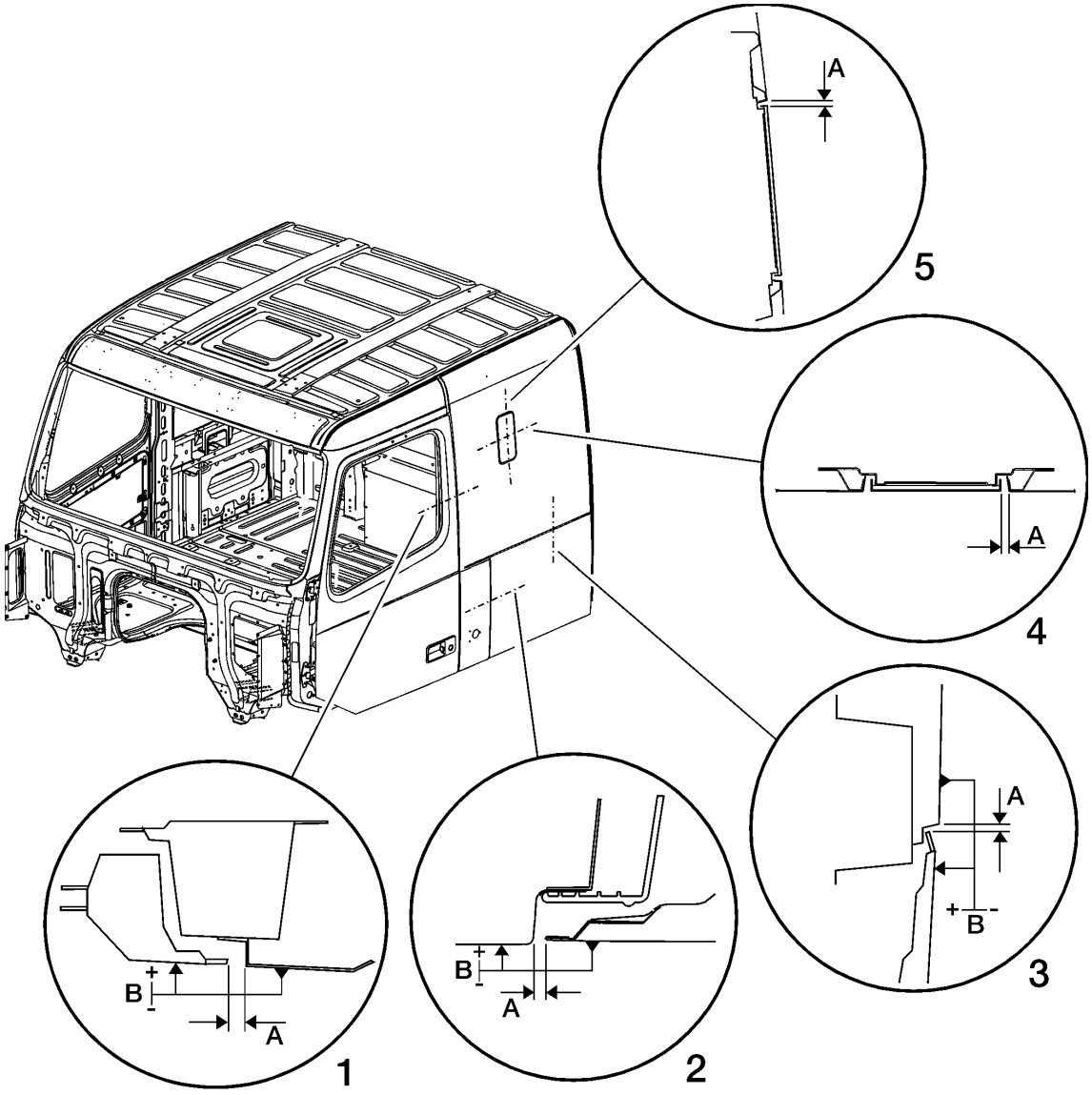
⚠ DANGER

Vehicles equipped with the Supplemental Restraint System (SRS) must be treated with care when repairs are made. To avoid injury when carrying out a repair, or to avoid damage or malfunction of the SRS system, refer to the SRS Service Manual for information. Failure to follow the correct service procedures may cause severe personal injury, or cause the SRS not to deploy during an accident. This could result in severe injury or death to the driver of the vehicle.

Specifications

Cab

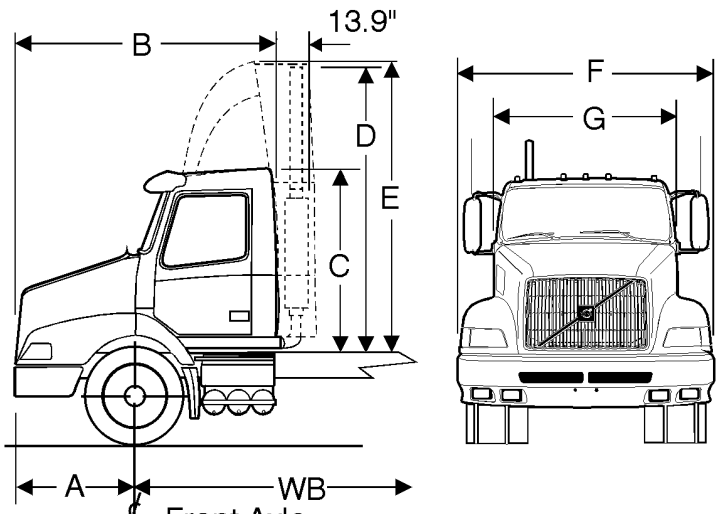
Panel Fit Measurements



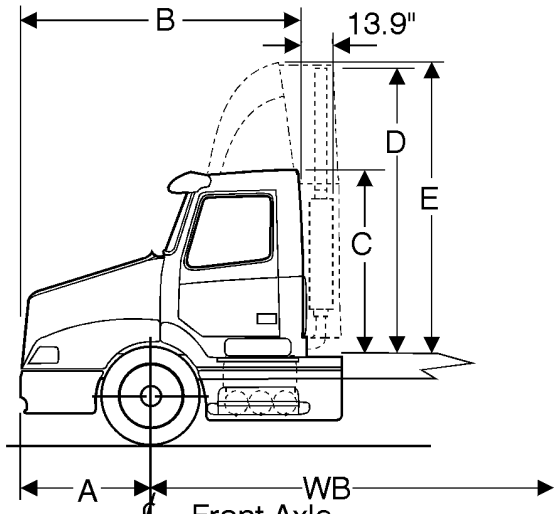
W8001409

	Measure	A	B
1	Measured over the whole length of the rear edge of the door to the cab side.	8.4 ± 1.5 mm (0.33 ± 0.06 in.)	Parallell $^{+0.0}_{-3.0}$ mm (Parallell $^{+0.0}_{-0.12}$ in.)
2	Measured over the whole front edge of the luggage compartment door to the cab side.	4.0 ± 2.0 mm (0.16 ± 0.08 in.)	Parallell ± 2.0 mm (Parallell ± 0.08 in.)
3	Measured over the whole top edge of the luggage compartment door to the cab side.	5.0 ± 2.0 mm (0.20 ± 0.08 in.)	Parallell ± 2.0 mm (Parallell ± 0.08 in.)
4	Measured on both sides for centering the vent in the cab opening.	8.0 ± 2.0 mm (0.31 ± 0.08 in.)	N/A
5	Measured on both sides for centering the vent in the cab opening.	7.0 ± 2.0 mm (0.28 ± 0.08 in.)	N/A

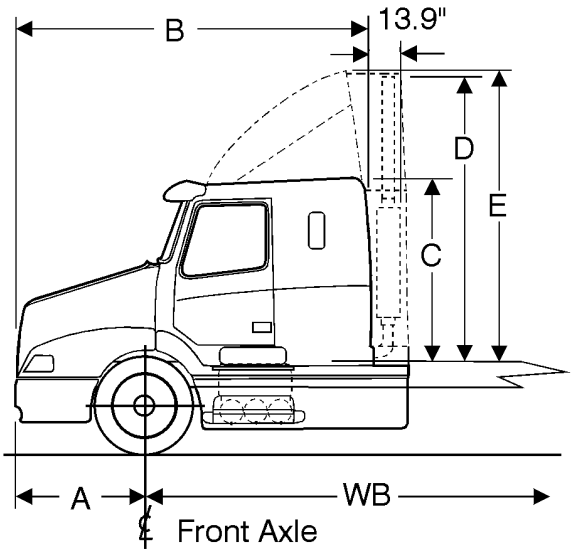
Overall Dimensions



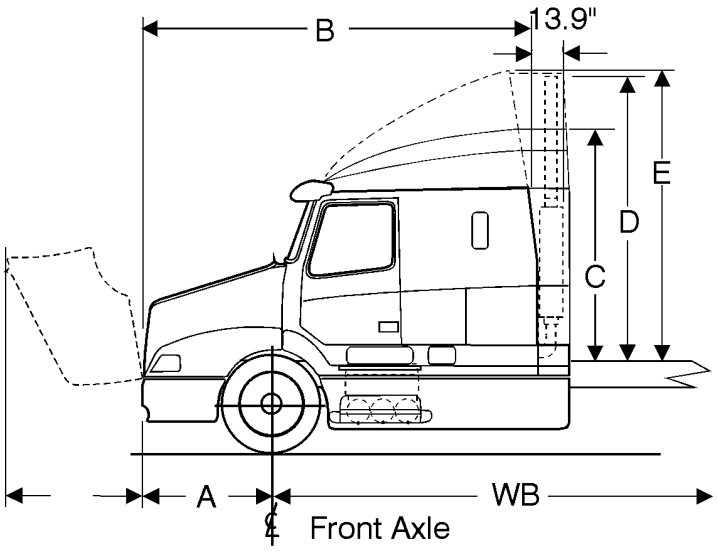
VNM - DAYCAB



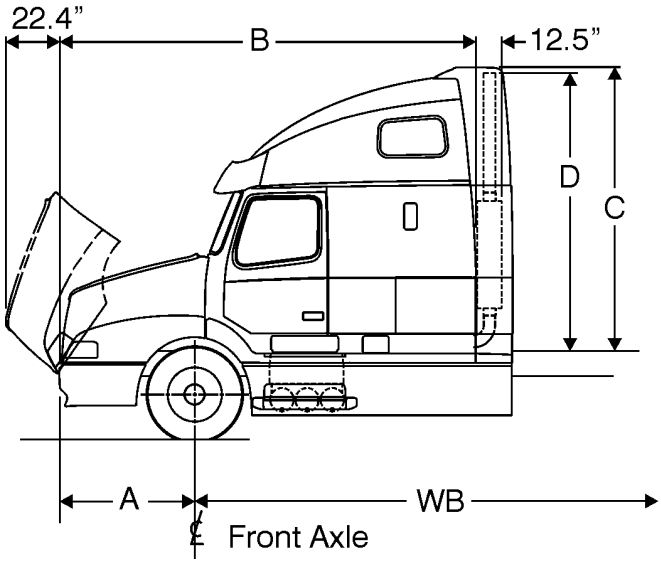
VNL - DAYCAB



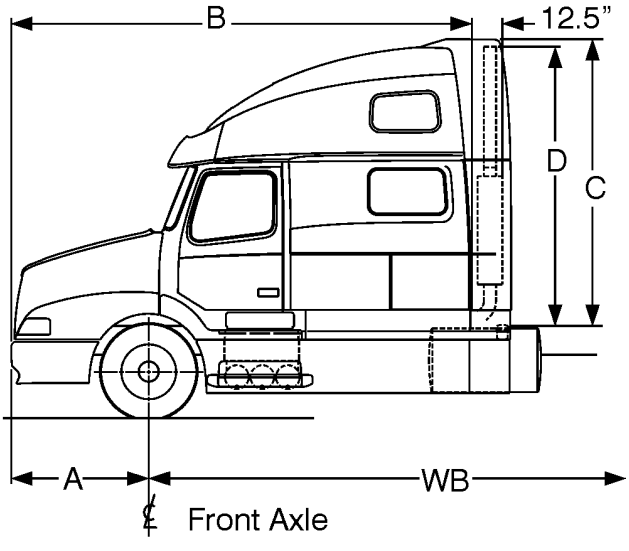
VNL - 420



VNL - 610



VNL - 660



VNL - 770

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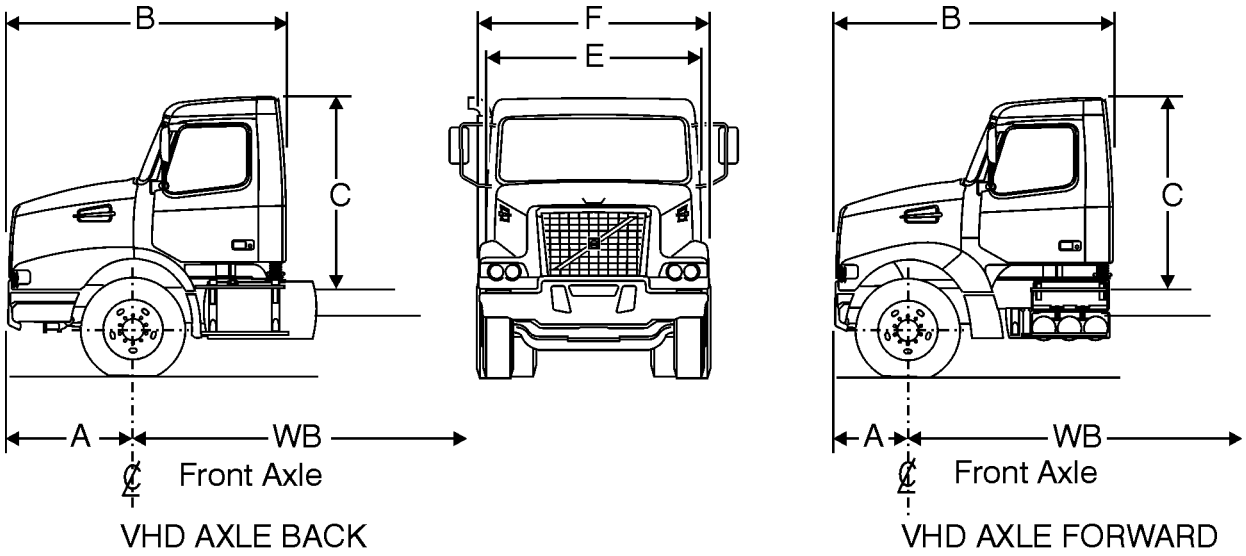


W8002890

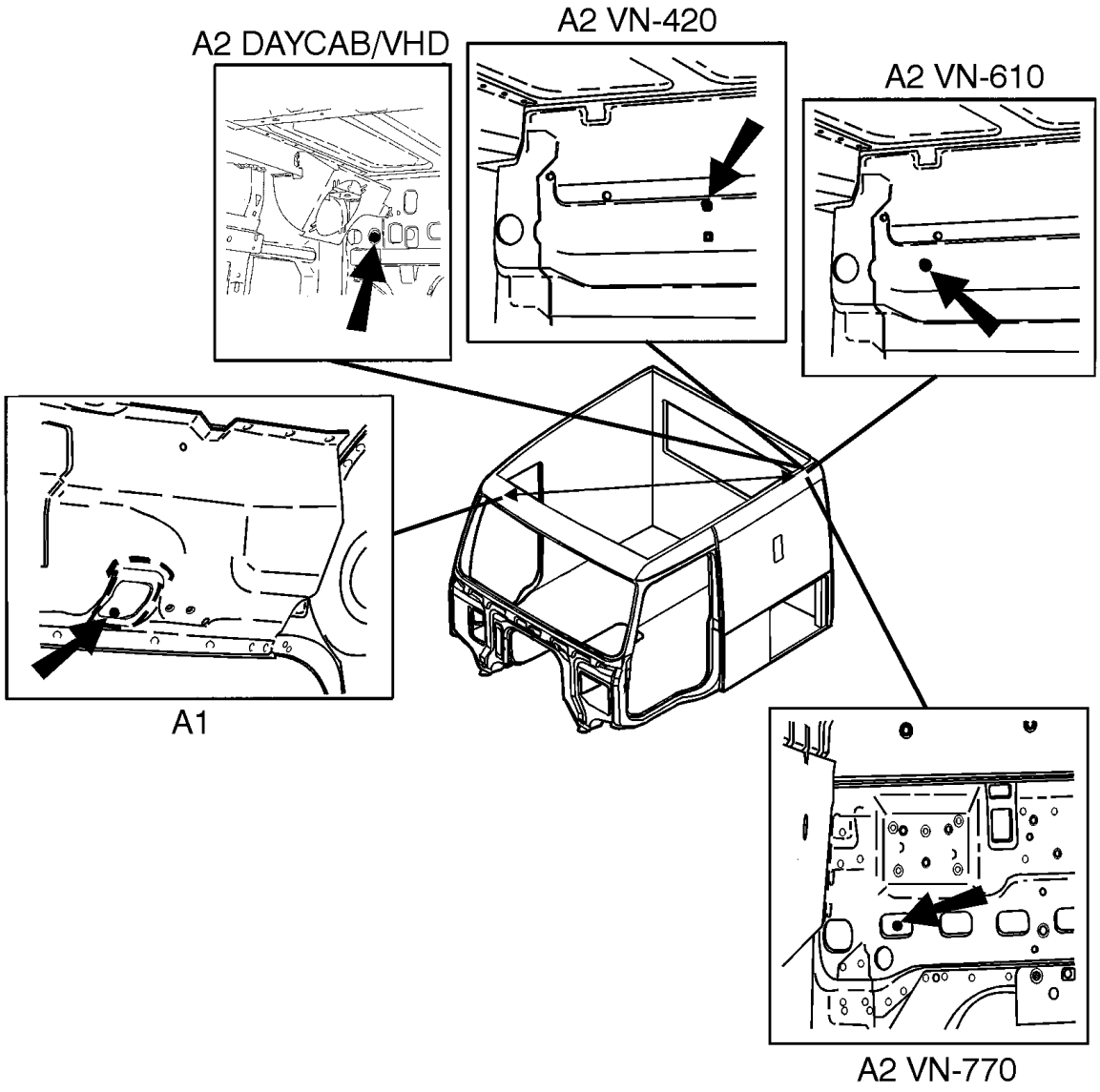
For tire size 275/80R22.5							
	VHD mm (in.)	**VNM mm (in.)**	**VNL mm (in.)**	**VNL-420 mm (in.)**	**VNL-610 mm (in.)**	**VNL-660 mm (in.)**	**VNL-770 mm (in.)**
A	AF 740 (29.1) AB 1300 (51.1)	1295 (51.0)	1435 (56.5)	1435 (56.5)	1435 (56.5)	1435 (56.5)	1435 (56.5)
B	2885 (13.6)	2870 (113.0)	3120 (122.8)	3935 (154.9)	4405 (173.5)	4405 (173.5)	4805 (189.2)
C	1888 (94.3)	1995 (78.5)	1995 (78.5)	1995 (78.5)	2350 (92.5)	2975 (117.1)	2975 (117.1)
D	N/A	2930 (115.4)	2930 (115.4)	2930 (115.4)	2915 (114.7)	2915 (114.7)	2915 (114.7)
E	2088 (82.2)	2990 (117.8)	2990 (117.8)	2990 (117.8)	2990 (117.8)	N/A	N/A
F	2413 (95.0)	2425 (95.5)	2405 (94.7)	2405 (94.7)	2405 (94.7)	2405 (94.7)	2405 (94.7)
G	N/A	2250 (88.6)	2250 (88.6)	2250 (88.6)	2250 (88.6)	2250 (88.6)	2420 (95.3)

Cab Cross-Measurement Points

To determine that a cab is within design specifications after an accident, the following guide lines should be used to determine if the cab should be straightened or if it needs to be replaced. Some of the guide lines stated are made on the basis that the interior is removed when measuring.

There are two types of measurements that can be made: distance between two defined points within specification, also the distance checked against the measurement from the other diagonal. No diagonal measurement is complete without comparison with the corresponding diagonal.

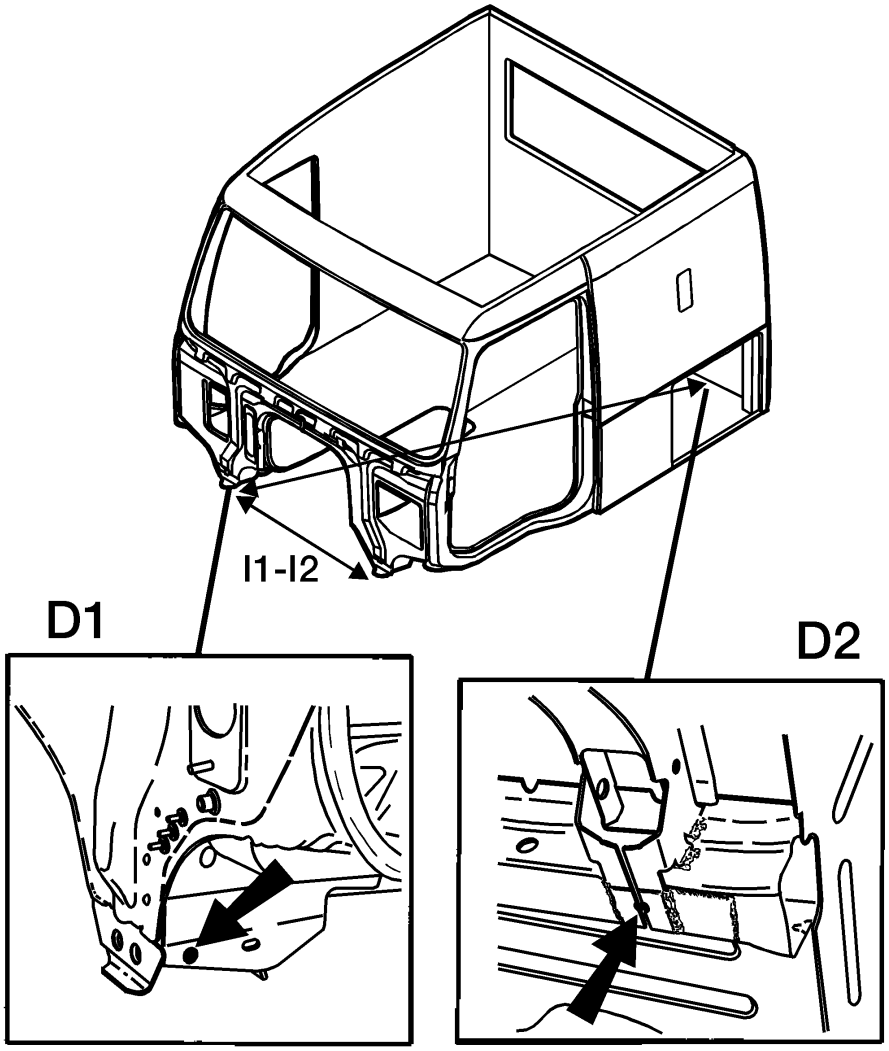
Inside Roof



W8002878

Cab Type	Daycab/VHD mm (in.)	VN-420 mm (in.)	VN-610 mm (in.)	VN-660 mm (in.)	VN-770 mm (in.)
Diagonal measurement A1 - A2 *Measured from the front edge of the rectangular hole (on sleeper cabs 610, 660 & 770, the hole is covered) to the center of the indicated hole in the rear corner.*	1979.0 (77.913)	2325.5 (91.555)	2820.5 (111.045)	2820.5 (111.045)	3201.0 (126.020)

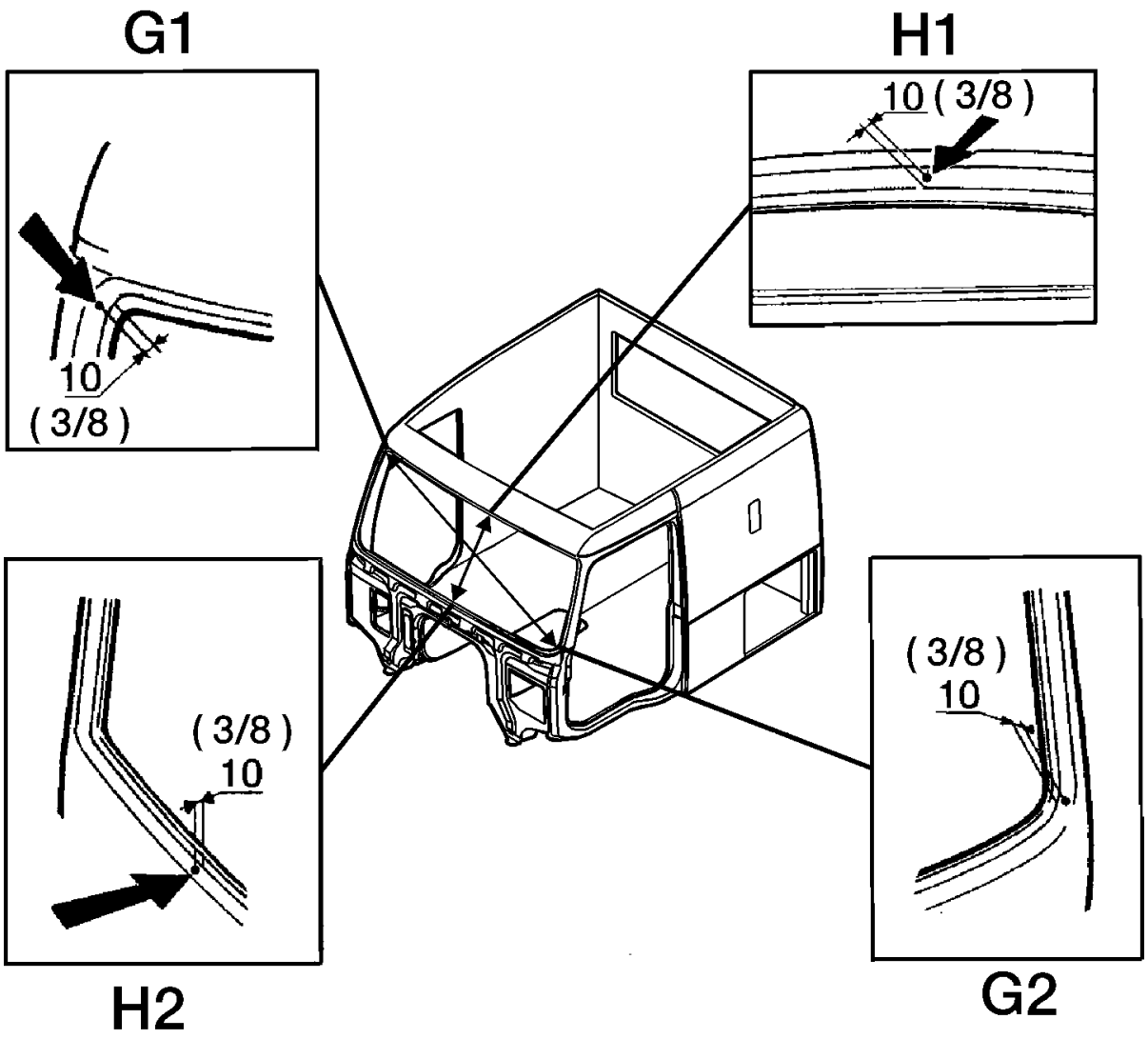
Cab Brackets Below Floor



W8001806

Cab Type	Daycab/VHD mm (in.)	VN-420 mm (in.)	VN-610 mm (in.)	VN-660 mm (in.)	VN-770 mm (in.)
Diagonal measurement: D1 - D2 *Measured from the center of the cab bracket bolt hole to the center of the air spring bolt hole (spring must be removed).*	1755.0 (69.094)	2425.0 (95.472)	2832.0 (111.496)	2832.0 (111.496)	3203.0 (126.100)
Straight measurement: I1 - I2 *Measured from the center of the cab bracket bolt hole across to the same hole on other side.*	All cabs: 1042.0 (41.024)				

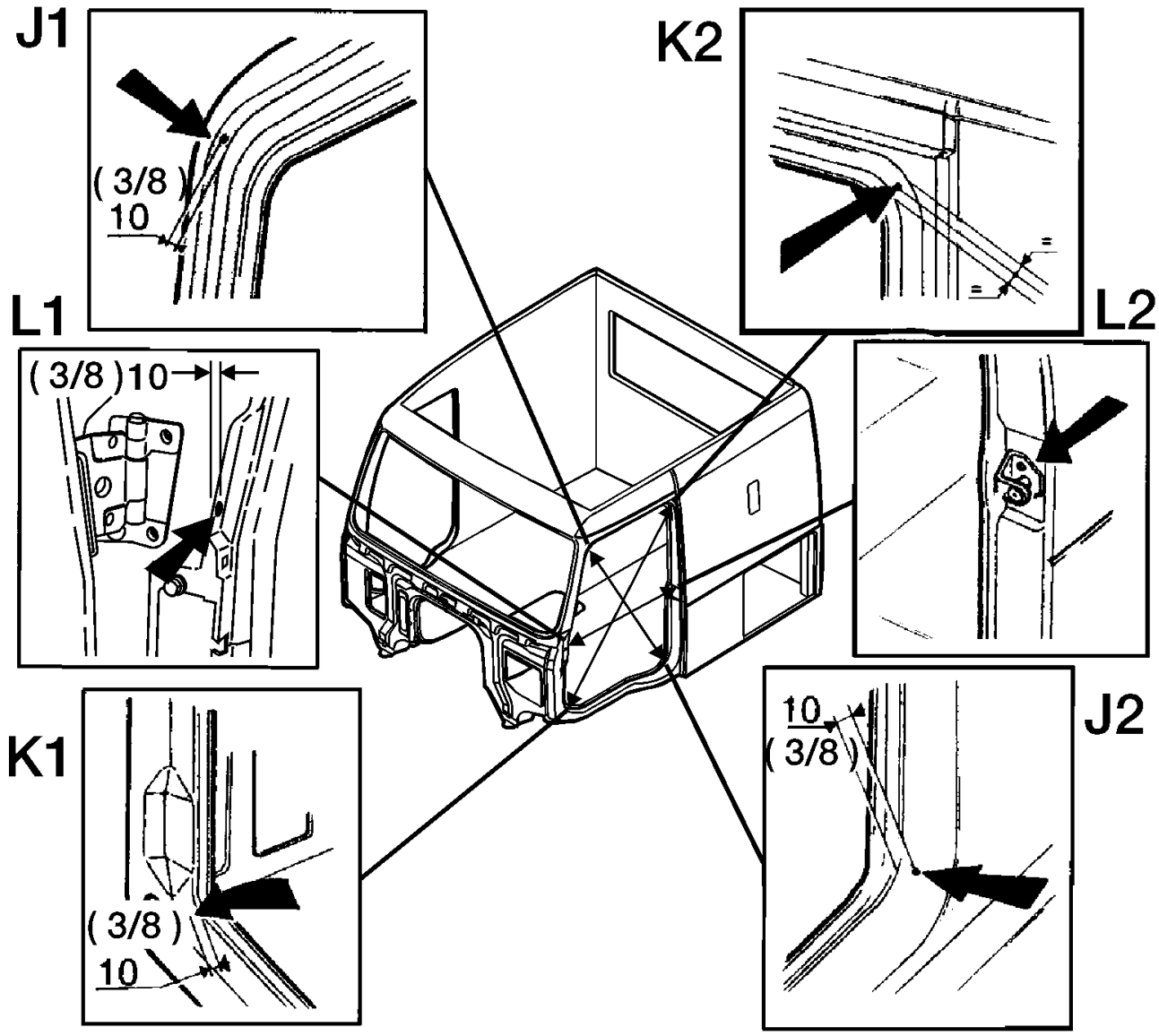
Windshield Opening



W8001802

Diagonal measurement: G1 - G2 *Measured from the furthest point of the radius on one side to the furthest point of the radius on the other side, allowing a space of 10mm (3/8 in.) from the flange .*	1981.0 mm (77.992 in.)
Straight measurement: H1 - H2 *Measured in the middle of the windshield opening, allowing a space of 10 mm (3/8 in.) from the flange.*	709.0 mm (27.913 in.)

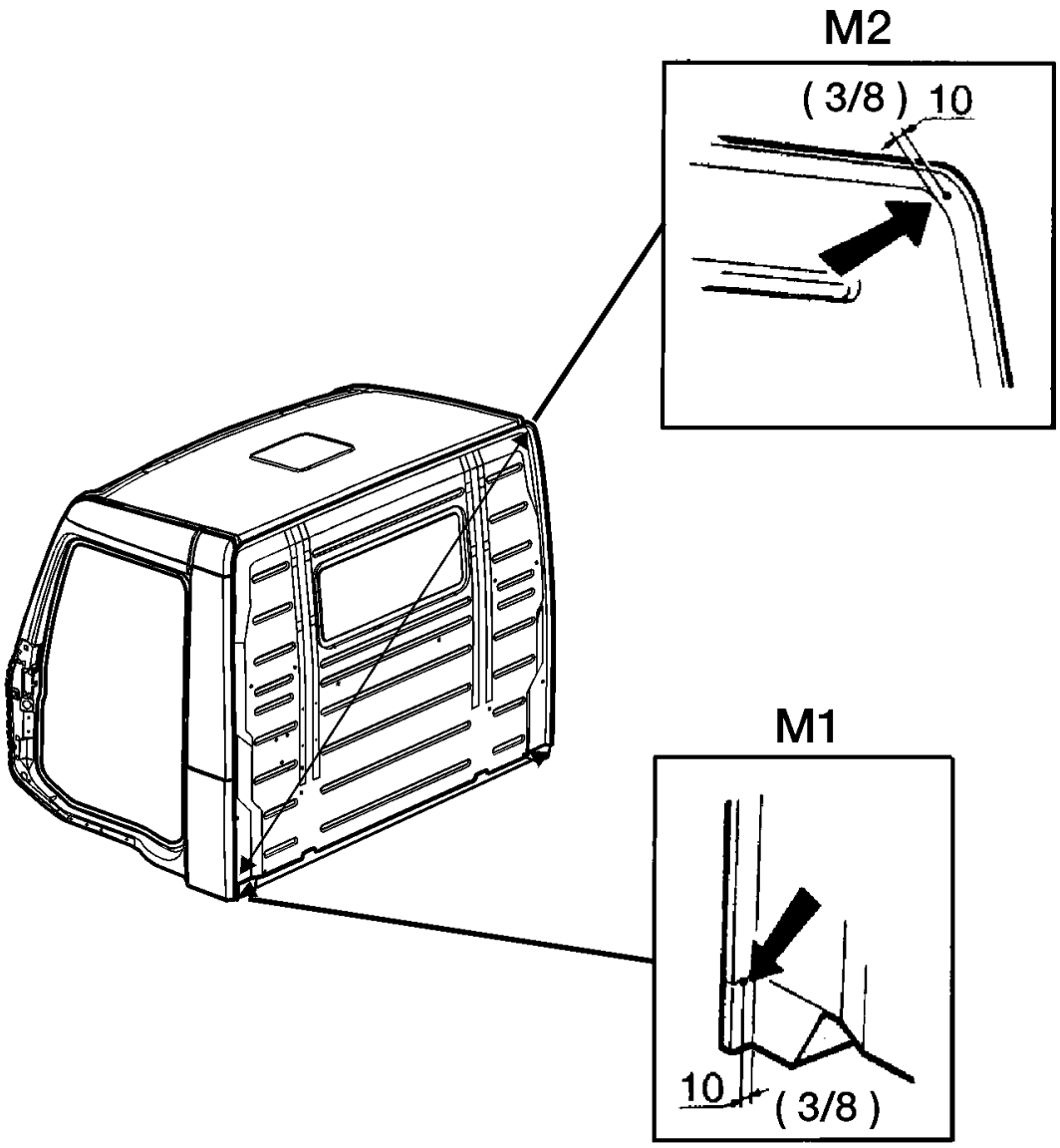
Door Opening



W8001803

Straight measurement: J1 - J2 *Measured from the furthest point of the radius on one side to the furthest point of the radius on the other side, allowing a space of 10 mm (3/8 in.) from the crease.*	1526.0 mm (60.079 in.)
Straight measurement: K1 - K2 *Measured from the furthest point of the radius on one side to the furthest point of the radius on the other side, allowing a space of 10 mm (3/8 in.) from the crease.*	1590.0 mm (62.598 in.)
Straight measurement: L1 - L2 *Measured from the rear upper center of the hole for the door latch nose to the bottom edge of the A-pillar flat area.*	1011.0 mm (39.803 in.)

Back Of Cab



W8001805

Cab Type	Other mm (in.)	VN-770 mm (in.)
Diagonal measurement: M1 - M2 *Measured from the seam to the furthest point of the inside radius on the other side, allowing for a space of 10 mm (3/8 in.) from the edges.*	2633.0(103.661)	2721.0(107.130)

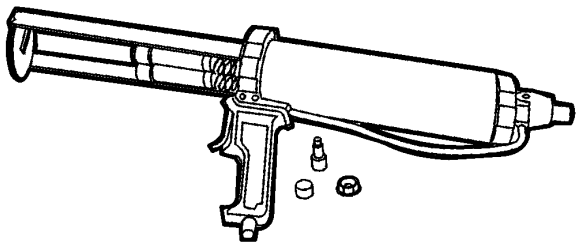
Tools

Cab Body, Special Equipment and Materials

The 300 or 600 ml pneumatic dispenser can be ordered in different sizes from Lord Corp (telephone: 800–234–FUSOR®) see part numbers below.

P/N 304 300 ml

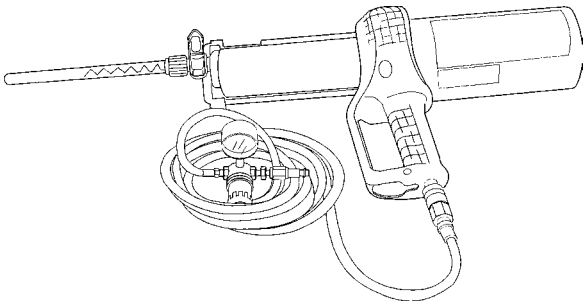
P/N 312 600 ml



W8002881

Supermix pneumatic dispenser, available from Lord Corp (telephone: 800–234–FUSOR®).

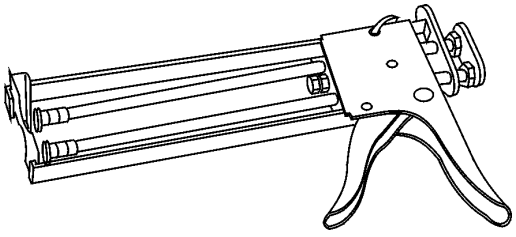
P/N 305



W8001102

300 ml manual dispenser, available from Lord Corp. (telephone: 800–234–FUSOR®).

P/N 301



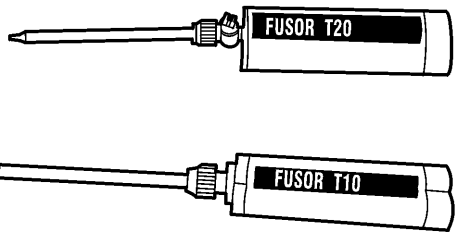
W8002291

FUSOR® Materials

For repair and maintenance of the VN Series cab SMC panels and cab roofs. Volvo recommends the use of FUSOR® Bonding and Repair Materials. The following items are available from Lord Corp. (telephone: 800–234–FUSOR).

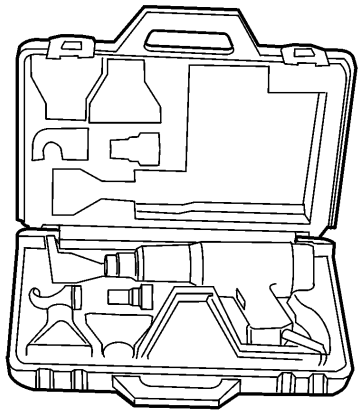
FUSOR Repair/ Bonding Adhesive	12.8 oz. 10 oz.	**P/N T20** **P/N T21**
FUSOR Factory Match Urethane Seam Sealer (in two colors 300 x 300 ml)	Neutral Black	**P/N T24**
FUSOR Repair Adhesive		**P/N T10**

FUSOR Expandable Foam **P/N 121**



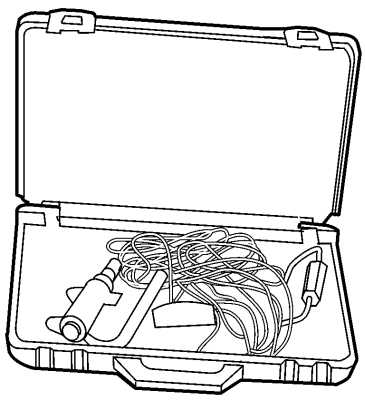
W8002891

Heat gun kit. Available from local tools distributor.



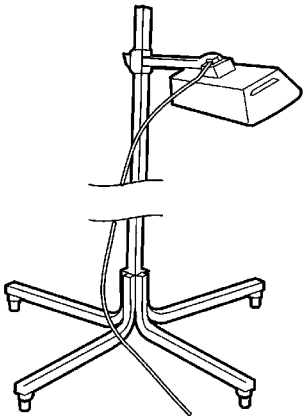
W8002882

Windshield tool Kit J-42391, available from Kent Moore (telephone: 800–328–6657).



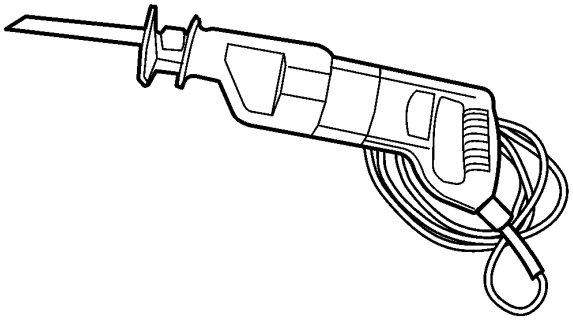
W8002884

Heat Lamp, available from local body shop parts distributor.



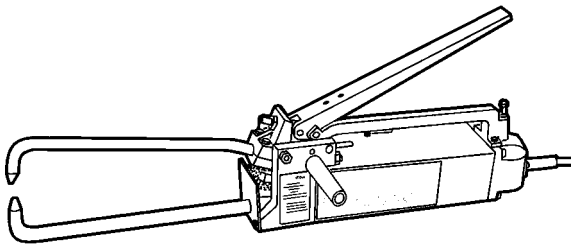
W8002885

Reciprocating Saw, available from local tool distributor.



W8002886

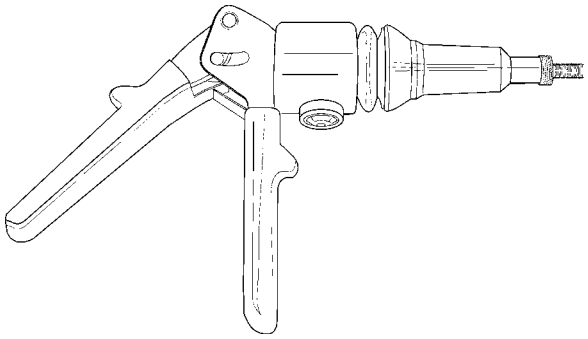
Spot weld tongs.
Order from local welding supplier.



W0001456

Rivet nut insertion tool kit, available from Kent-Moore (telephone: 800–328–6657).

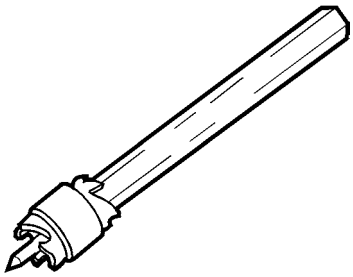
P/N J-42405



Spotweld removal tool, available from Snap-On or MAC.

P/N C117X
(MAC)

P/N
YA2550–4
(Snap-On)



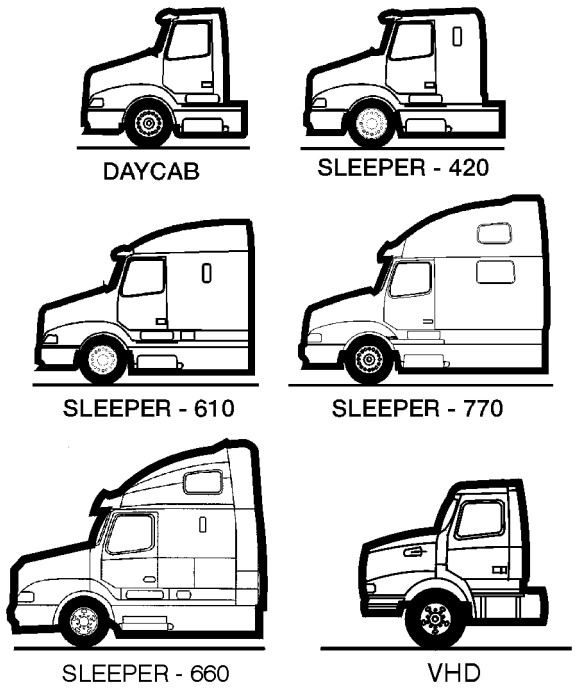
W0001457

Design and Function

Cab

General

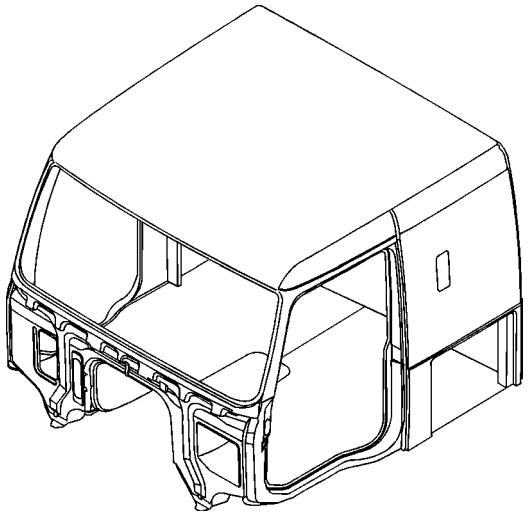
There are five models of the VN-series cab: Day Cab, and Sleeper Cabs; 420, 610, 660 and 770. The sleeper model numbers refer to the measurement from the rear of the seats to the back wall — 42, 61, 66 or 77 inches.



W8002879

All exposed surfaces are streamlined for the best aerodynamic effect. Panels and accessories mount flush to the cab surfaces. Mounting hardware does not show.

All cabs are manufactured from high strength steel (HSS) body panels which are welded to the HSS frame profiles to form an integrated unit. HSS has a higher strength-to-weight ratio than traditional steel or truck-grade aluminum. This process makes the cabs light and strong.



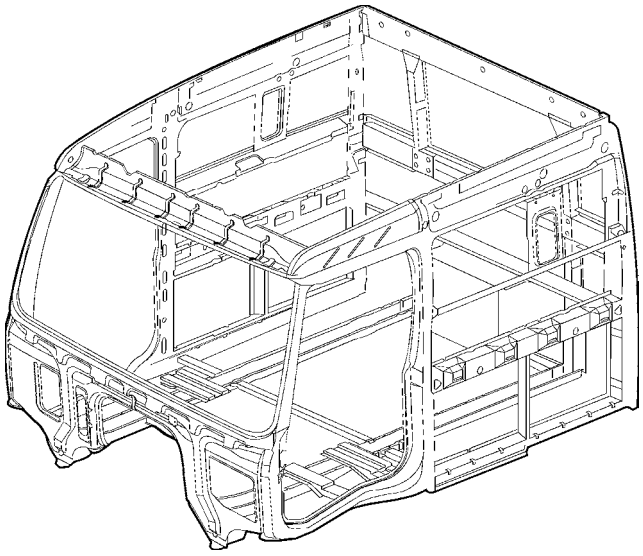
W8001410

Cab Frame

The cab frame and body panels form a cage that protects the driver and passenger. The cab exceeds protection safety standards in case of collisions or rollovers.

Unlike conventional cab structures, where a load carrying frame supports the outer body panels, both the VN and VHD cab frame and body panels are designed to be part of the load carrying structure.

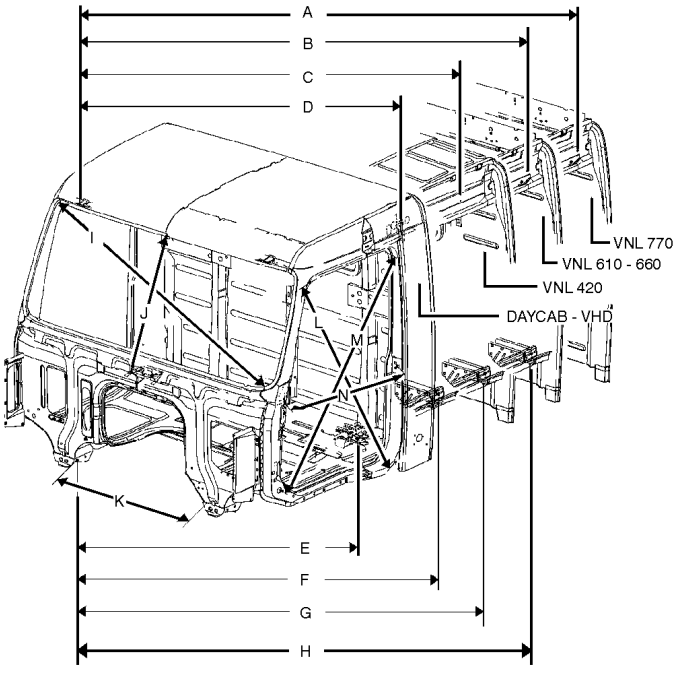
Therefore, it is very important to follow the recommended practices for repairing the cab body, whether straightening panels or exchanging parts.



W8001354

Measuring Points

To inspect or check cabs that have been in an accident, measuring points are used to determine the integrity of the cab structure. Measurements with tolerances are given in “Cab Cross-Measurement Points” page 8.



W8002889

Body Panels

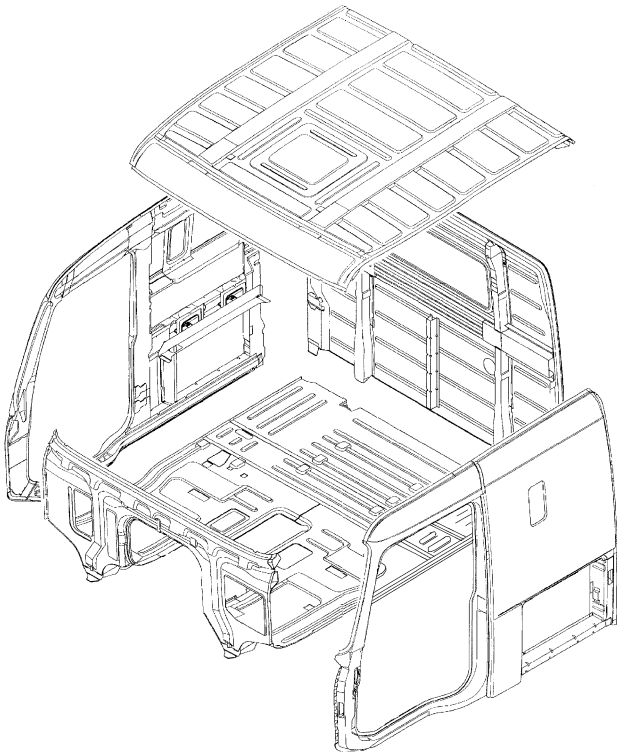
When major body damage occurs, you should replace entire sections instead of changing parts within a section. Replacing an entire section perserves the structural integrity of the cab and generally takes less time.

Because of the high strength steel used in the body parts, it is typically harder to straighten and align a damaged part.

High Strength Steel (HSS)

HSS should not be treated as ordinary steel when repaired. It is recommended that panels are replaced, instead of the general practice of cutting out and welding in smaller parts of a panel or sectioning.

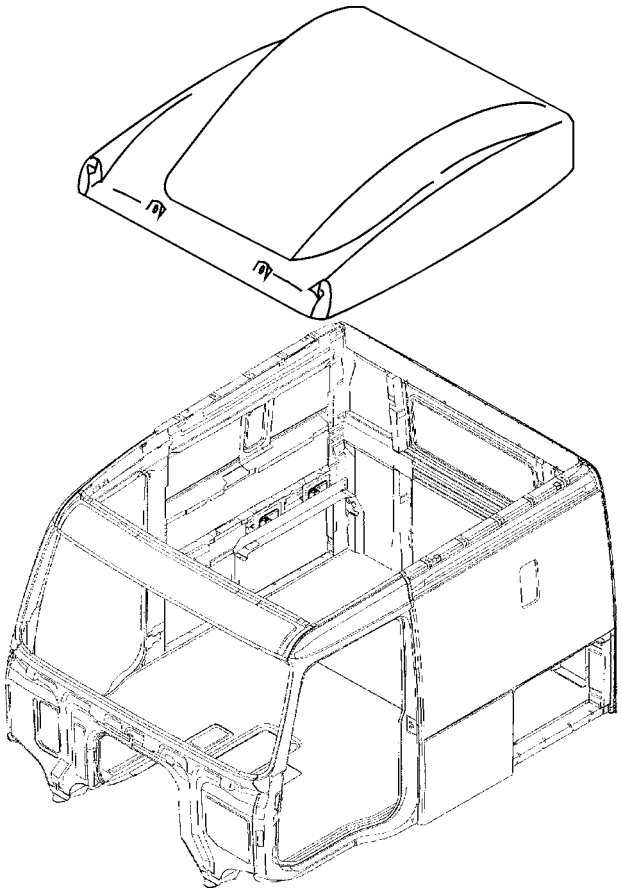
HSS yield point increases when it is heat treated. This means that panel straightening should be done while cold. Heating the steel would make it harder to straighten.



W8001801

Roof

On 610, 660 and 770 sleeper cabs, the roof cap is made of SMC material. (Sheet Moulded Compound) It is bonded, riveted, and screwed to the metal cab structure to form an integral part of the cab. See “Body Panel, Repair (SMC)” page 36, or “Roof, Replacement (SMC)” page 39 for work procedures.



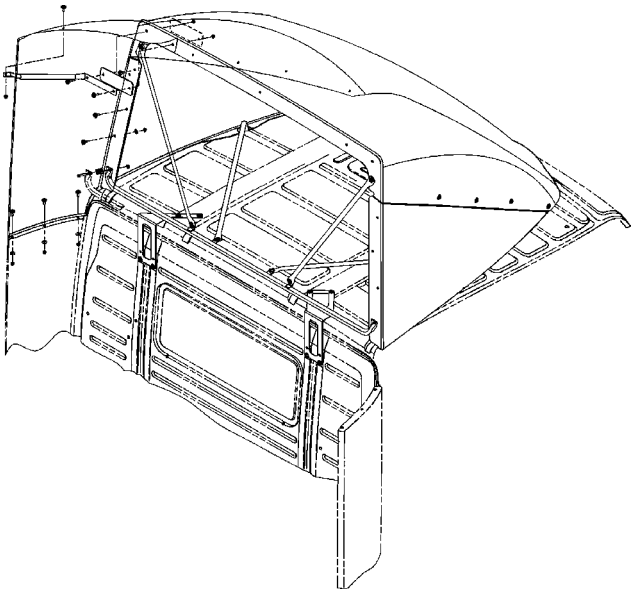
W8001799

Air Fairings

Air fairings are available for all models. For more information on Air Fairings please refer to:

Service Bulletin 891–008 Air Fairing Repair VNL, VNM

IMPACT Function Group 891
Information Type: Bulletin
”Air Fairing Repair VNL, VNM”



W8001364

Service Procedures

Body Panel, Removal

DANGER

Before working on a vehicle, set the brakes, place the transmission in neutral and block the wheels. Failure to do so can result in unexpected vehicle movement and can cause serious personal injury or death.

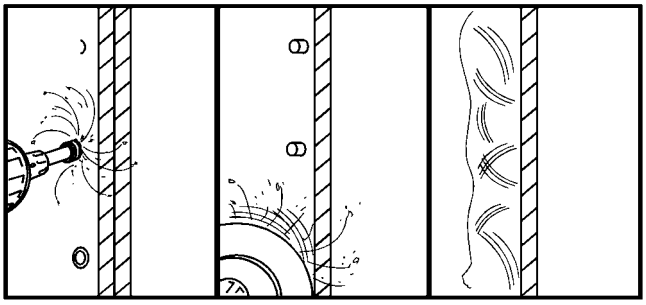
WARNING

Always wear a face shield or safety goggles when drilling or grinding. When sanding or grinding off surface coating, wear a respirator. Failure to follow these recommendations may result in personal injury to the eyes or lungs.

Before removing panels, determine the type of welding method to be used for installation of the new panels. Different removal approaches should be used, depending on whether the new panel is MAG (metal active gas) welded or spotwelded.

Panel Installation-Spotwelding

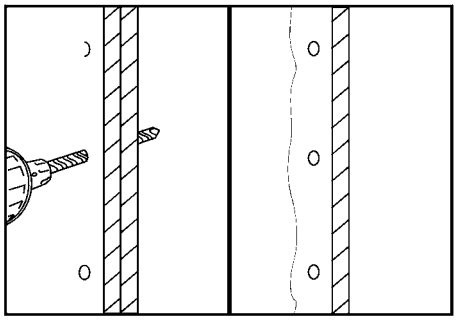
If spotwelding is used to install the new panel, remove the damaged panel with a spotweld removal tool, working from the side of the damaged panel. This puts the holes in the damaged panel and leaves the undamaged panel whole after grinding off of the welds to leave a good spotwelding surface.



W8001807

Panel Installation-Plugwelding

If MAG welding is used to install the new panel, remove the panel with a spotweld removal tool, working from the side of the undamaged panel, or drill through the spotweld from either side. This puts holes in the undamaged part that will be used for plug-welding the new panel in.



W8001808

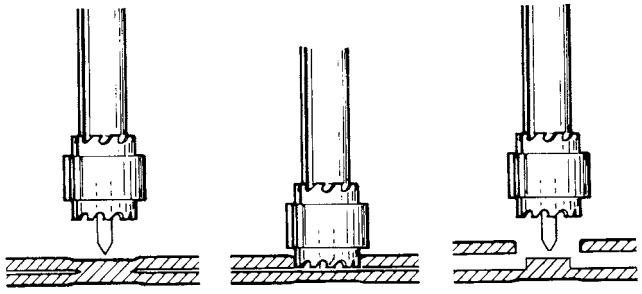
Using Spotweld Removal Tool

To drill out spot welds, a special drill bit should be used. We recommend using a 13 mm (0.5 in) hole cutting bit, which is available from many tool suppliers. It can be ordered from:

Snap-On® P/N YA2550–4
MAC® P/N C117X

The cutting depth of the bit is adjustable and provides a quick, clean cut.

Note: Work with care so that the surfaces on parts to be reused are not damaged. Use whichever method that causes the least damage.



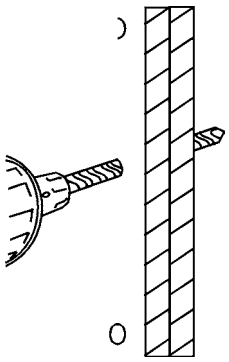
W8001814

Using Drill

In some places, such as the rear wall panel, the spot welds can be drilled out using a 13 mm (0.5 in.) drill bit to drill through both sheets.

The hole remains in the panel that is to be saved and becomes the hole used for plug-welding the new panel to the cab.

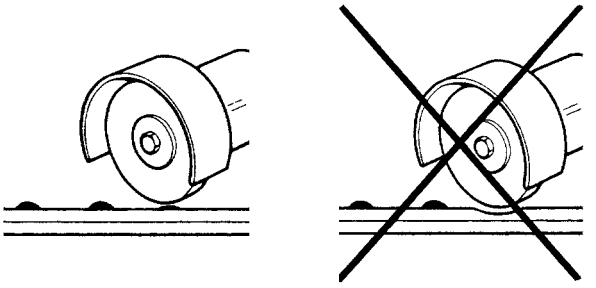
Note: This method should be used only when the new panel is plug-welded into place.



W8001827

Grinding Plugwelds

The remaining bumps from spot welding or plug welding are ground off. Grind only to the surface of the panel Take care not to remove any material from the panel that is reused.



W8001813

Welding

DANGER

Before working on a vehicle, set the brakes, place the transmission in neutral and block the wheels. Failure to do so can result in unexpected vehicle movement and can cause serious personal injury or death.

WARNING

Always wear appropriate eye protection to prevent the risk of eye injury due to contact with debris or fluids.

Note: Instructions in the service procedures are based on resistance spotwelding or MAG (Metal Active Gas) plug-welding . Spotwelding is the same method that was used when the cab was manufactured and also produces good results in a workshop environment. When done according to recommended practices, MAG-welding meets strength and appearance requirements.

Important: Oxy–acetylene welding must not be used in body repair work on these cabs. The High Strength Steel will alter its material properties when heated too much.

CAUTION

Adequate ventilation/air evacuation equipment must be used when welding inside the cab. Breathing welding exhaust may be hazardous to your health.

WARNING

Always use a welding face mask to protect eyes and face. Use welding gloves to protect hands. Failure to follow these recommendations may result in personal injury to eyes or skin.

CAUTION

Do not section any body panel. All panels and parts of the cab structure are designed to be load bearing. The cab structure can be weakened if patching in panels or welding methods other than those described in this manual are used.

Note: Take care not to overheat the material when welding.

CAUTION

Always disconnect the main battery ground **last.** If there are other ground cables connected to the battery (such as engine ECU, satellite system, etc.), disconnect those grounds first, then remove the battery ground cable. Electronic modules may be damaged when additional grounds are connected/disconnected without the main battery ground connected.

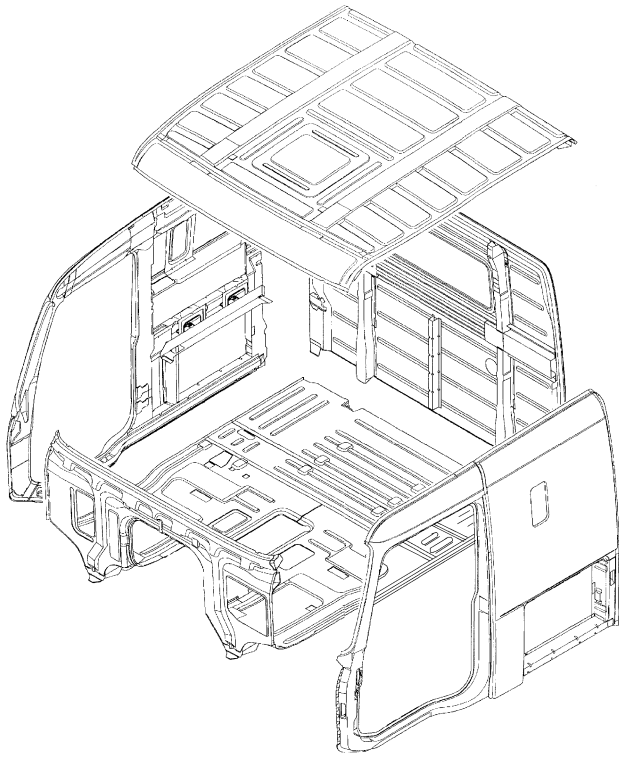
Prior To Welding

— Plan the job in advance.

— Do not remove more components than necessary.

— Locate wiring harnesses.

Note: Disconnect batteries before welding. Also disconnect any Electronic Control Unit (ECU) in the electrical system, especially: the Engine ECU, Airbag ECU, Instrument cluster, Air conditioning control module and ABS control module. Other ECUs may be installed. Check the wiring diagram for the vehicle. In general, control units can not have long-term exposure (more than 15 minutes) to temperatures greater than 90°C (195°F).



W8001801

MAG-Welding

WARNING

Always use a welding face mask to protect eyes and face. Use welding gloves to protect hands. Failure to follow these recommendations may result in personal injury to eyes or skin.

With MAG (Metal Active Gas)-welding it is not necessary to clean the panels of electro-deposits or phosphating (primer).

Note: Compared to regular steel, High Strength Steel parts need slightly larger holes for plug-welds.

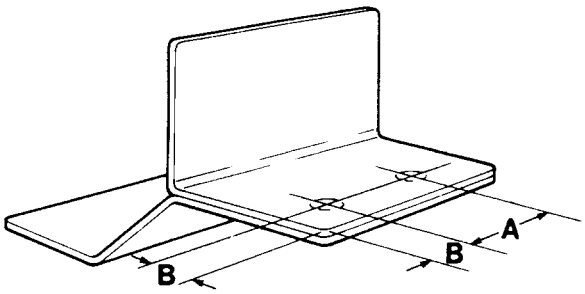
Punch Replacement Part for Plug Welding

If the panel does not already have holes made for plug-welding, select the hole size according to the metal thickness:

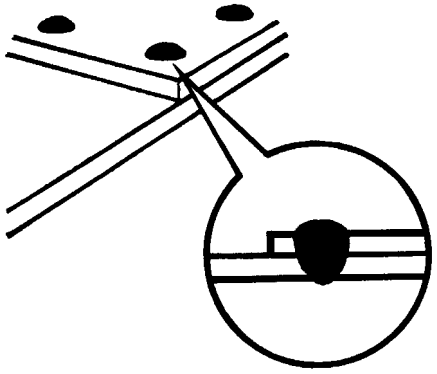
6 mm (0.25 in.) for thickness less than	1.5 mm (16 gauge)
8 mm (0.3125 in.) for thickness less than	2.5 mm (12 gauge)
10 mm (0.375 in.) or over for thickness greater than	2.5 mm (12 gauge)

Distance Between Holes

Material Thickness	Distance A	Distance B
0.6 mm (24 gauge)	25 mm (1.0 in.)	10 mm (0.375 in.)
0.8 mm (21 gauge)	30 mm (1.1875 in.)	10 mm (0.375 in.)
1.2 mm (18 gauge)	35 mm (1.375 in.)	12 mm (0.50 in.)



W8001810



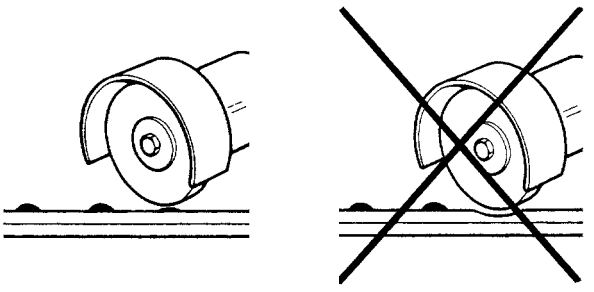
W8001811

Use welding primer on all mating surfaces. Allow to dry for 15 minutes. If there is any grinding damage outside the welding surface, apply filler primer and allow to dry for 15 minutes. Apply sealant in all seams before priming and painting.

Check weld quality when complete.

Grind down plug-welds with a grinding disc. Grind off any weld splatter from the edges of weld spots.

Note: Grind only the part of the weld that extends over the level of the panel. Do not grind below thickness of panel.



W8001813

Resistance Spot Welding

⚠ WARNING

Always use a welding face mask to protect eyes and face. Use welding gloves to protect hands. Failure to follow these recommendations may result in personal injury to eyes or skin.

With spotwelding, it is necessary to expose the metal in the weld seam for the necessary electric contact. Remove any coating on panels where they are to be joined.

Note: Compared to regular steel, High Strength Steel parts need spotwelds closer together.

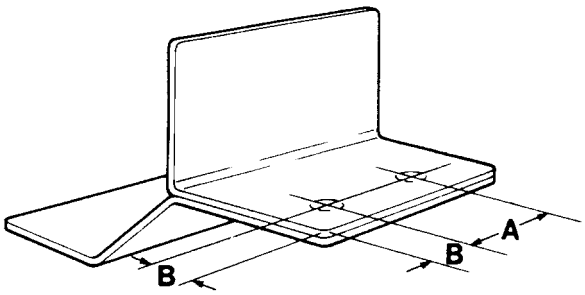
Before welding:

- Thoroughly check the area where parts are joined together. Look for unevenness. Use hammer and counterhold to straighten metal.
- If grinding damage extends outside of the immediate welding area, apply a coat of filler primer to the area. Allow to dry for 15 minutes.
- Before welding, apply welding primer to the inside surface of the flanges on both sides. Allow to dry for about 15 minutes.

Before starting on the panels, weld some test pieces first, then check the weld quality by forcing them apart. This tests the capacity of the spotwelding tongs. Spacing between spotwelds should be approximately:

Sheet Gage	Spacing A Between Welds	Spacing B From Edge
0.6 mm (24 gage)	11 mm (7/16 in.)	5 mm (3/16 in.)
0.8 mm (21 gage)	14 mm (9/16 in.)	5 mm (3/16 in.)
1.0 mm (19 gage)	18 mm (11/16 in.)	6 mm (1/4 in.)
1.2 mm (18 gage)	22 mm (7/8 in.)	7 mm (9/32 in.)
1.4 mm (16 gage)	25 mm (1 in.)	8 mm (5/16 in.)

Grinding spotwelds is usually not necessary. Only clean the surface and use filler before painting.

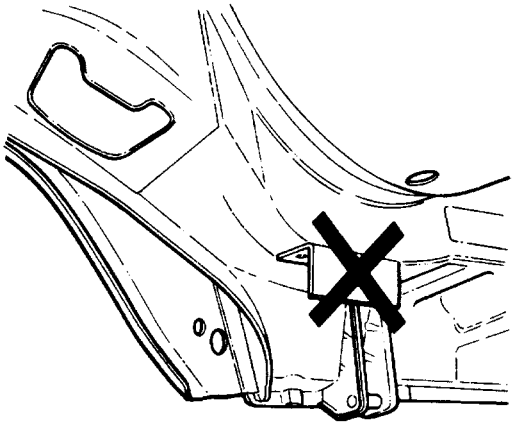


W8001810

Alignment

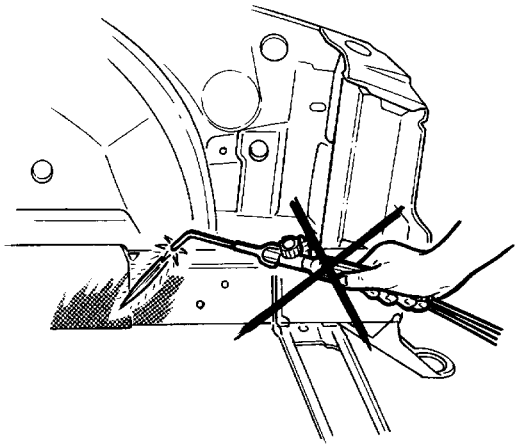
Do not use welded anchorages on sheet metal parts which will not be replaced.

For best results, continuously check alignment.



W8001809

Do not use heat when aligning. The yield point of High Strength Steel increases with heat treatment.



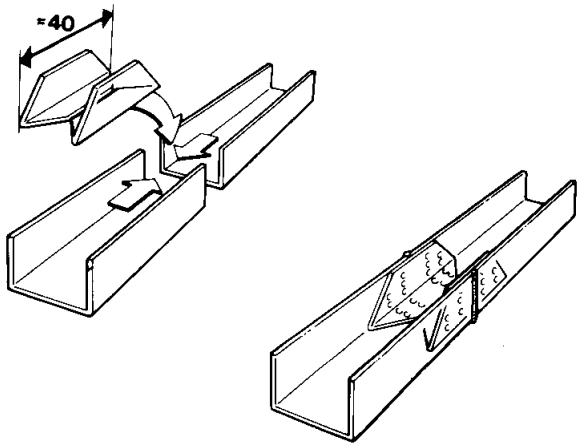
W8001812

Frame Profile, Repair

The damaged section should be replaced with a corresponding section, taken from a spare part that has been cut out and matched.

Cut a strip approximately 40 mm (15 in.) long from the remainder of the spare part. This should then be cut lengthwise and fitted inside the profile.

Drill holes in the undamaged part and in the aligned spare part. Spotweld or plugweld the joint strip approximately 20 mm (8 in.) on the undamaged part. Place in position, and spotweld or plugweld the piece taken from the spare part. Then, seamweld the joint.

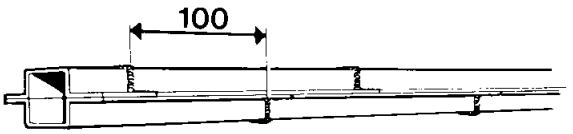


T8006462

Jointing Assembled Profiles

When jointing an assembled profile, offset the joints in the profile approximately 100 mm (4 in.).

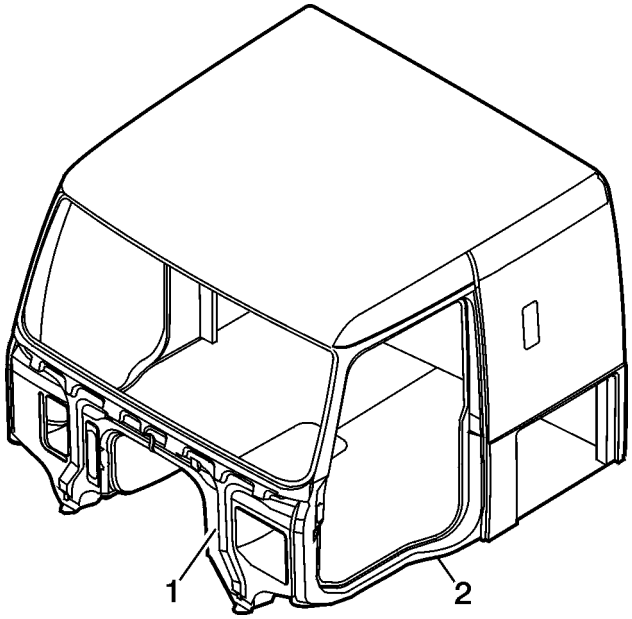
When aligning assembled profiles, make sure that the inner profiles are aligned and do not have residual deformations.



T8006463

Areas to Avoid Jointing

In load-bearing structures, jointing must not be done within the intermediate panel or within the floor member.



1 Intermediate panel
2 Floor member

Rustproofing After Repair

The area needs to be treated with rustproofing oil:

- after a panel has been replaced;
- if repair has been done to the panel;
- if sealant was removed.

Warranty against cab rust is only valid for the cab as it is delivered from the plant. If repairs are done, the repaired area is not covered by the rust warranty.

If the vehicle is exposed to a corrosive atmosphere (salt, sulphur or other oxidizing elements), it is recommended that the initial rust protection be inspected and added to if necessary.

For more information about rustproofing procedures, refer to:

Service Manual 182–500 *Rustproofing Cab VN, VHD*

IMPACT Function Group 182
Information Type: General
”Rustproofing Information”

Surface Coating

Volvo VN-series cabs are made to the highest quality standards. All body repair practices should follow the same principle. Always use genuine Volvo replacement parts in repairs. Use the correct tools and correct methods. Sand and clean the surface well, use etch primer on any exposed metal, fill any irregularities, and use primer for the whole area. Use sealant before painting.

Body Panel, Replacement

For more work information, also see “Rear Cab Panel, Replacement” page 28.

DANGER

Before working on a vehicle, set the brakes, place the transmission in neutral and block the wheels. Failure to do so can result in unexpected vehicle movement and can cause serious personal injury or death.

WARNING

Always wear appropriate eye protection to prevent the risk of eye injury due to contact with debris or fluids.

1

CAUTION

Before welding, disconnect batteries and any Electronic Control Units (ECUs) equipped on the vehicle. Failure to disconnect batteries and ECUs can result in damage to the electrical system or ECUs.

Disconnect batteries. Disconnect all ECUs. This includes the instrument cluster and control units for engine, air bag, ABS brakes, air conditioning, data concentrator (Volvo engine), Combi Relay, Road Relay, etc.

2

CAUTION

Do not section any body panel. All panels and parts of the cab structure are designed to be load bearing. The cab structure can be weakened if patching in panels or welding methods other than those described in this manual are used.

Determine the method of installation for the new panel. This dictates the method of removal, see “Body Panel, Removal” page 21.

3
Check the new panel and the reused parts of the cab for a good fit. Align the reused parts if necessary, see “Alignment” page 25.

4
Prepare the surfaces of the panels for welding. If using spotwelding, see “Frame Profile, Repair” page 25for more information. If using plugwelding, see “MAG-Welding” page 23.

5
Line up the parts and hold in place with clamps or self threading sheet-metal screws until the part is welded into place.

6
Before welding, check settings by doing test welds on scrap pieces that are of the same thickness as in the parts to be welded.

7
Weld the part into place using either spotwelding or plugwelding. Remove clamps.

8
Prepare surface for filler and seam sealer. Grind down plugweld humps and any spatter. Do not remove any material from the panel.

9
Coat all ground areas with primer and let it dry for about 15 minutes. Use seam sealer for all seams and weld area. FUSOR® Seam Sealer is paintable in approximately 30 minutes.

8172-03-02-01
Rear Cab Panel, Replacement

For additional work information, also see “Body Panel, Replacement” page 27.

DANGER

Before working on a vehicle, set the brakes, place the transmission in neutral and block the wheels. Failure to do so can result in unexpected vehicle movement and can cause serious personal injury or death.

WARNING

Always use a welding mask to protect eyes and face when welding. Use a respirator and ensure good ventilation when welding, to protect lungs from foreign matter. Failure to follow these recommendations may result in personal injury.

WARNING

Use a face shield to protect eyes and face when grinding. Use gloves to protect hands from sharp metal edges. Failure to follow these recommendations may result in personal injury to eyes or skin.

CAUTION

Before welding, disconnect batteries and any Electronic Control Units (ECUs) equipped on the vehicle. Failure to disconnect batteries and ECUs can result in damage to the electrical system or ECUs.

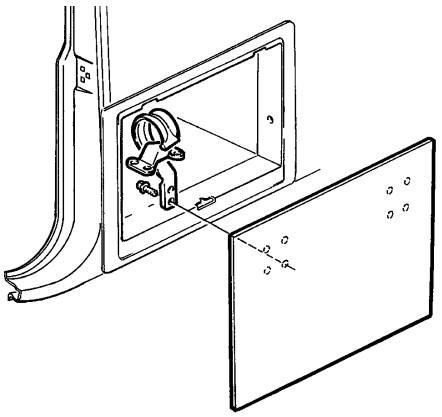
1
Remove rear and side upholstery panels. Remove rear headliner.

2
Remove bunk support. Remove any other components that are blocking the replacement procedure.

3
Remove the upright exhaust stack(s) from the rear of the cab.

4
If equipped, remove the air fairing side skirts and brackets for the roof fairing. Lift off the entire air fairing.

5

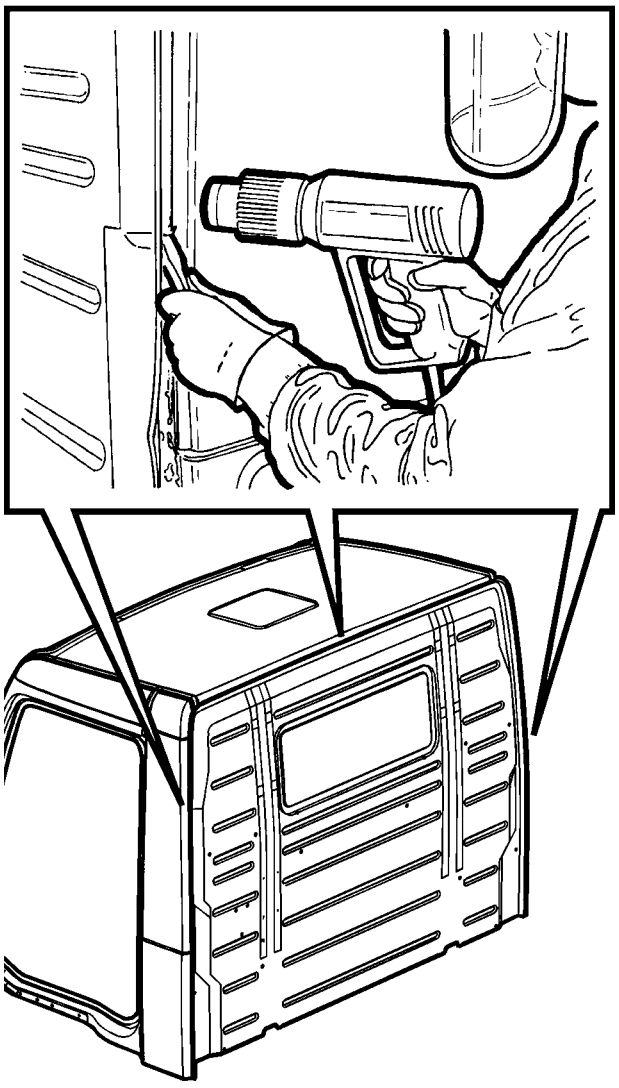


T8006650

On sleeper cabs only: remove the luggage compartment door from both sides.

6
Remove the carpet from the luggage compartment floor. Remove any other part that blocks the replacement procedure.

7



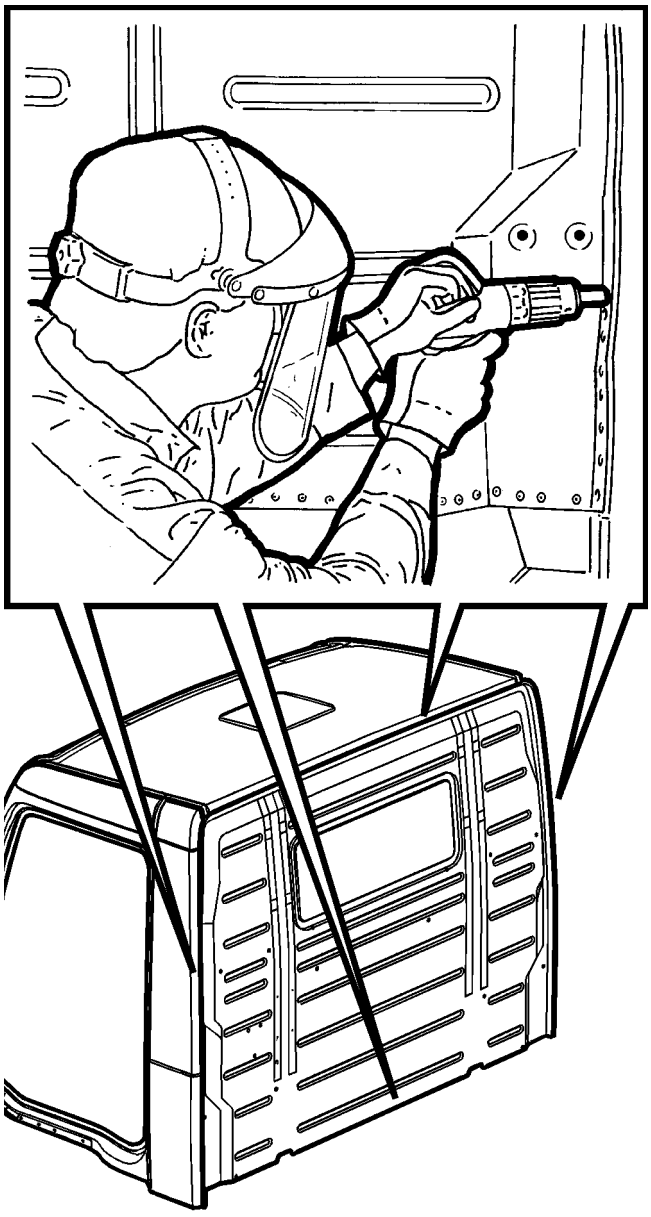
W8001514

⚠ WARNING

Use a face protection mask to shield the face and gloves to protect the hands when using the heat gun. Failure to follow these recommendations may result in burns on face or hands.

Remove the sealer from the panel weld channel using a heat gun and a scraper.

8



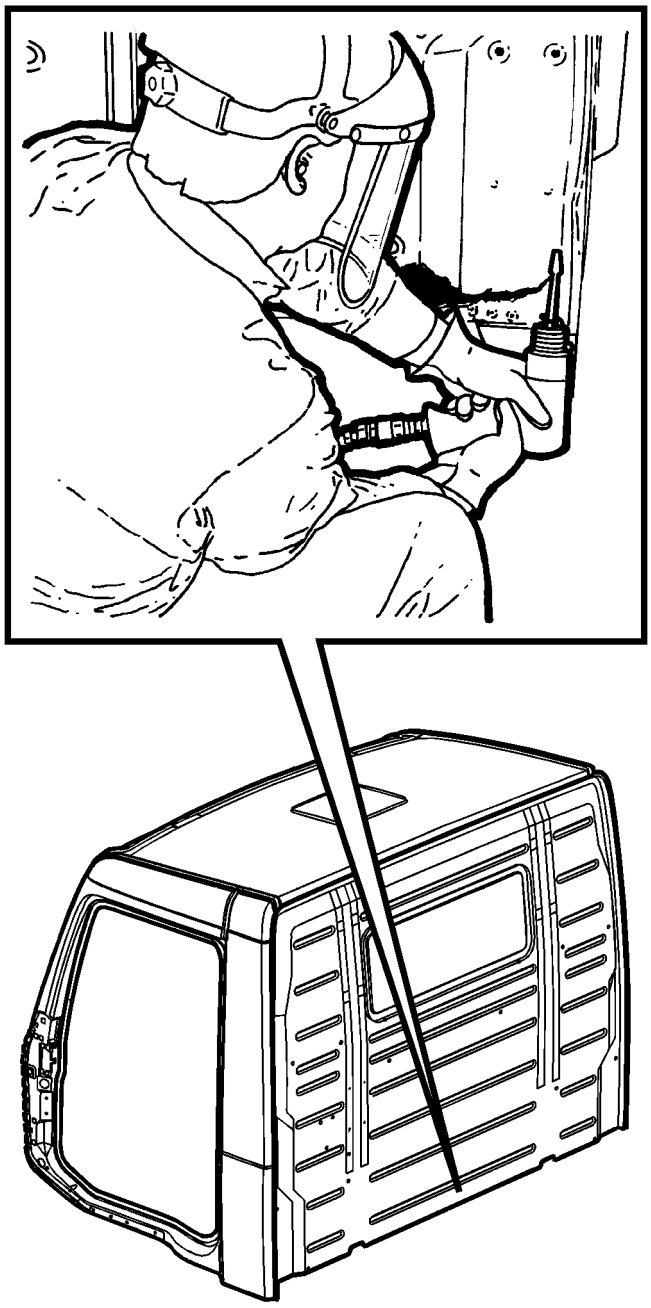
W8001512

⚠ WARNING

Use a face shield to protect eyes and face when drilling. Use gloves to protect hands from sharp metal edges. Failure to follow these recommendations may result in personal injury to eyes or skin.

Drill out the spotwelds using the special drill bit for spotweld removal. For proper panel removal procedures, see “Body Panel, Removal” page 21.

9



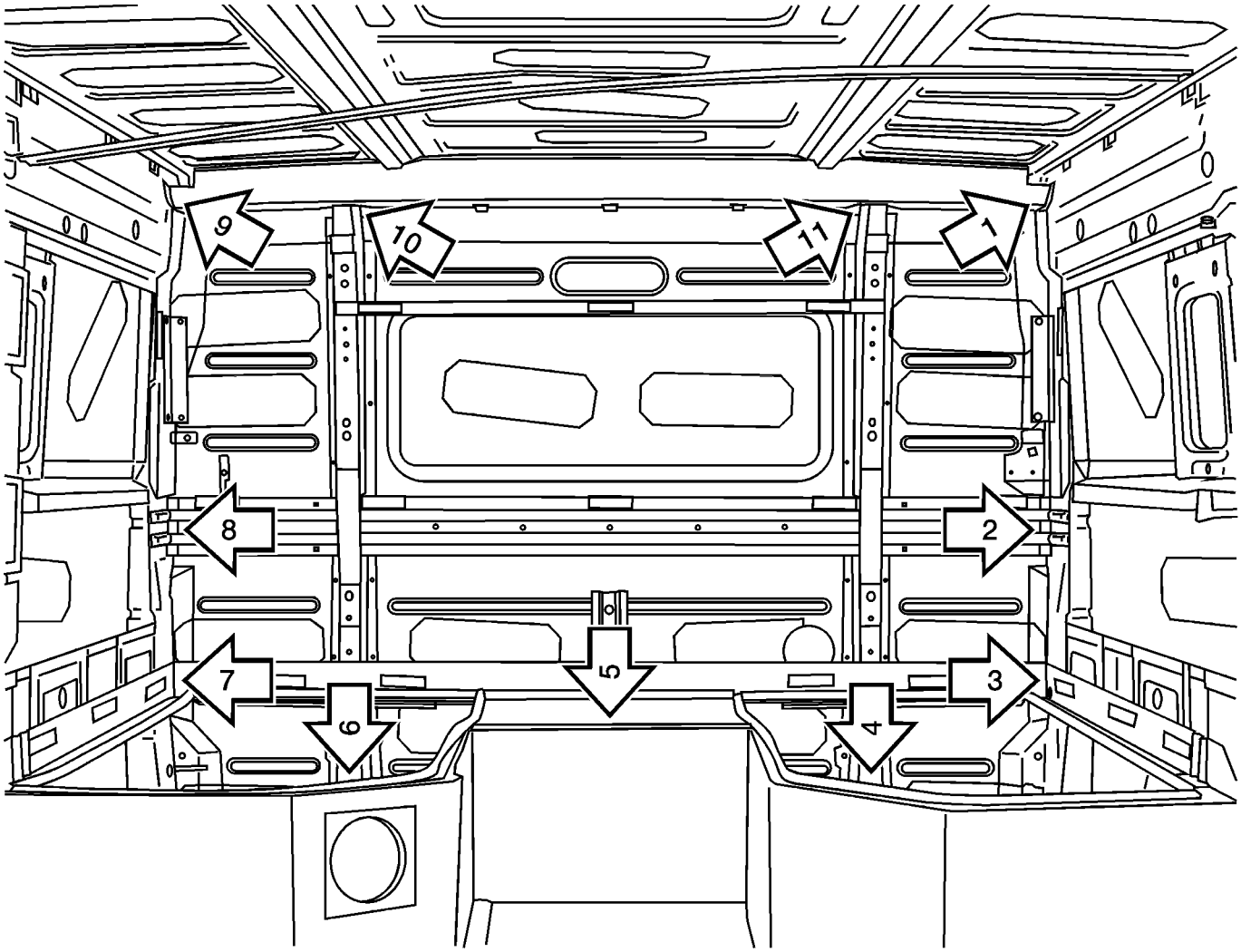
W8001506

⚠ WARNING

Do not use an air chisel without proper safety equipment, such as eye protection and heavy gloves. Failure to follow these recommendations may result in personal injury to eyes or skin.

Rough-cut the panel out using an air chisel.

10



W8001518

Remove all joint sealer around the seam between the back panel and the rest of the cab. Grind off all weld seams around the beam and bracket ends. Try not to remove any material from the cab structure that will be reused.

Note: Remove the welds in such a manner that it can be clearly seen where the welds go when the new panel is in place.

Note: Numbers 1 to 11 on the figure above show weld points.

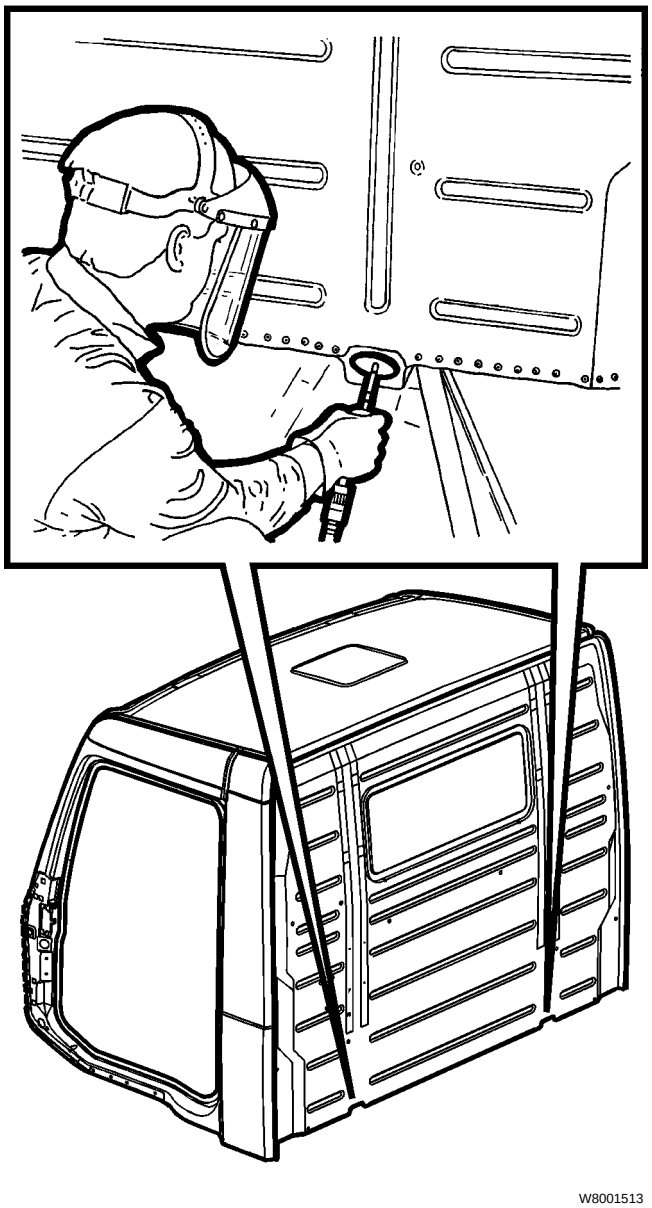
⚠ WARNING

Use a face protection mask to shield the face, and gloves to protect the hands when using the heat gun. Failure to follow these recommendations may result in burns on face or hands.

⚠ WARNING

Use a respirator when grinding to protect lungs from foreign matter. Failure to follow these recommendations may result in personal injury.

11



W8001513

WARNING

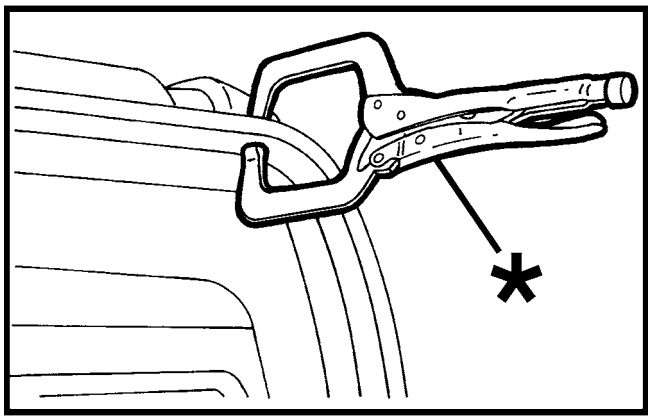
Use a face shield to protect eyes and face when grinding. Use gloves to protect hands from sharp metal edges. Failure to follow these recommendations may result in personal injury to eyes or skin.

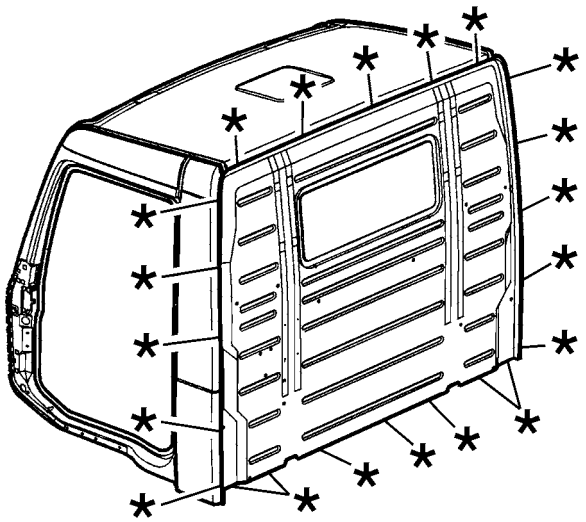
Cut the welds loose from the outside of the lower cab rails, and remove the panel.

12

On the parts of the cab that will be reused, grind the surface smooth at the removed spotwelds. Take care not to grind off any material except the spotwelds.

13

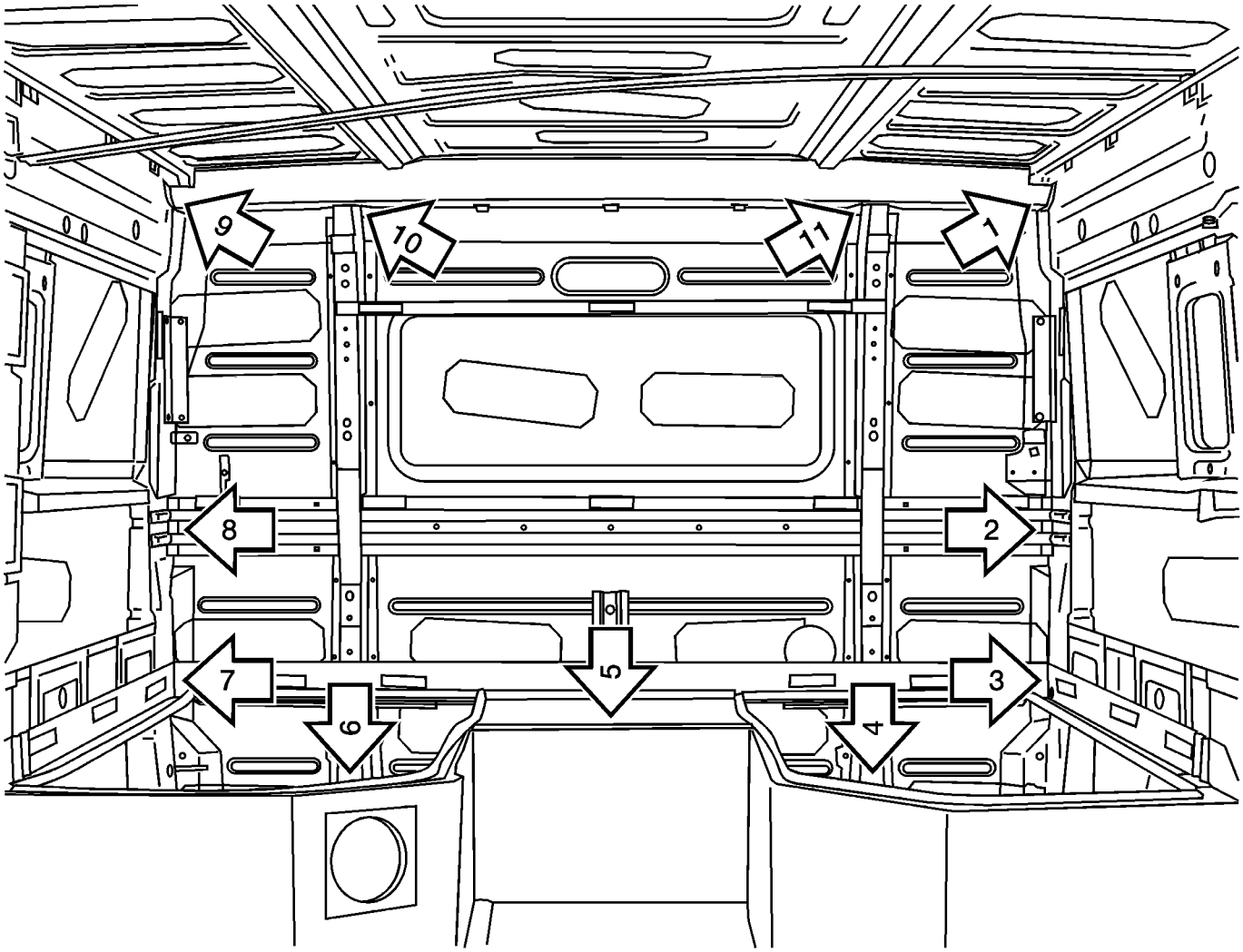




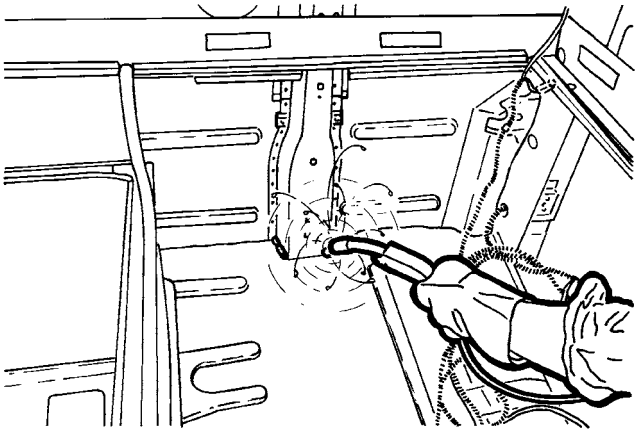
W8001511

Place the new panel securely into the opening. Apply weld primer. Press the panel in until it fits tightly against the opening. Hold the panel in place with clamps. Make sure the clamps are evenly distributed around the rim of the panel at the points indicated.

14



W8001518

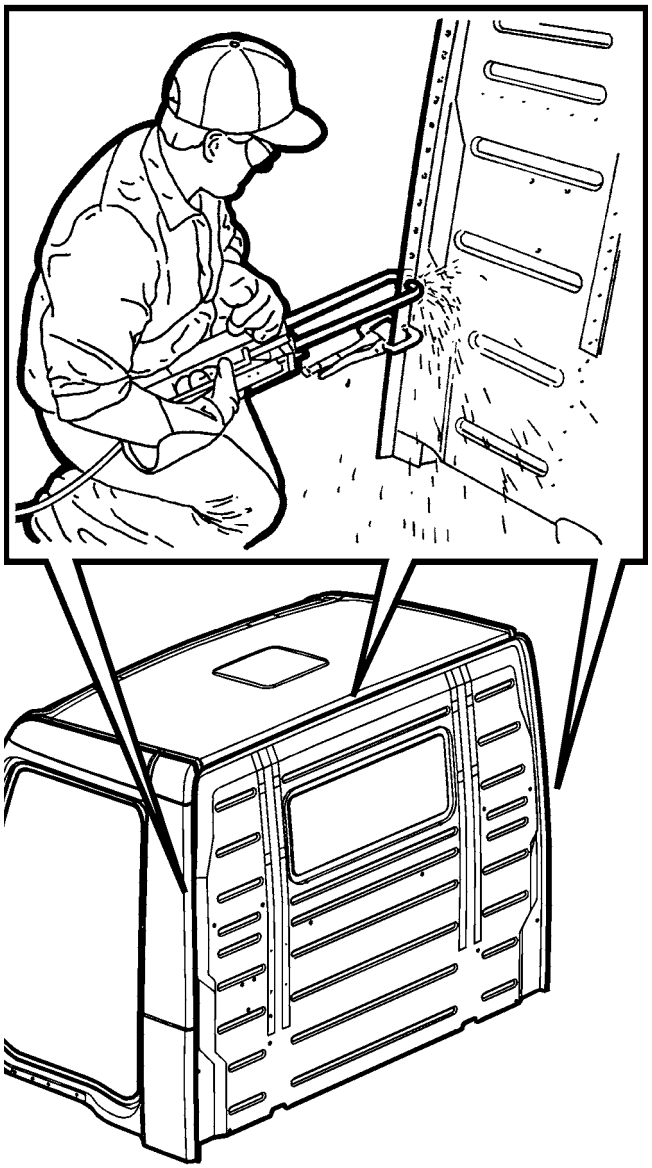


W8001495

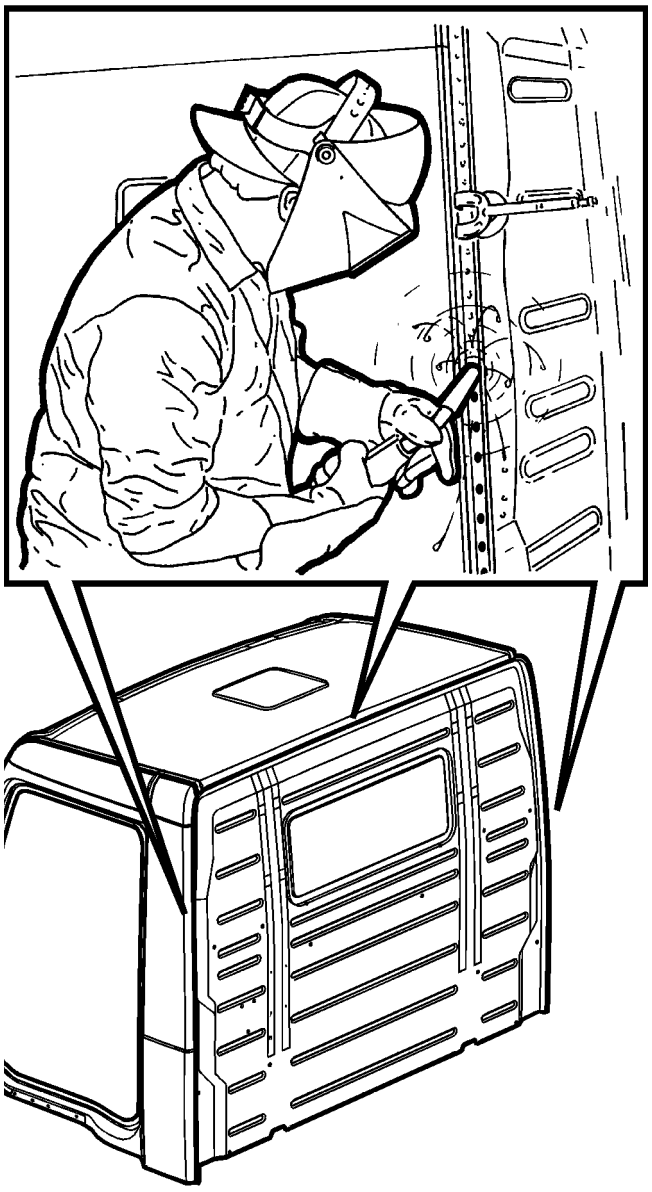
Check panel alignment before starting to weld. Weld all adjoining points between panel crossmembers and the sides of the cab. Welds should be the same length and in the same location as the removed welds.

Note: Numbers 1 to 11 on the figure above show weld points, on the left, figure shows welding by hand.

15



W8001510



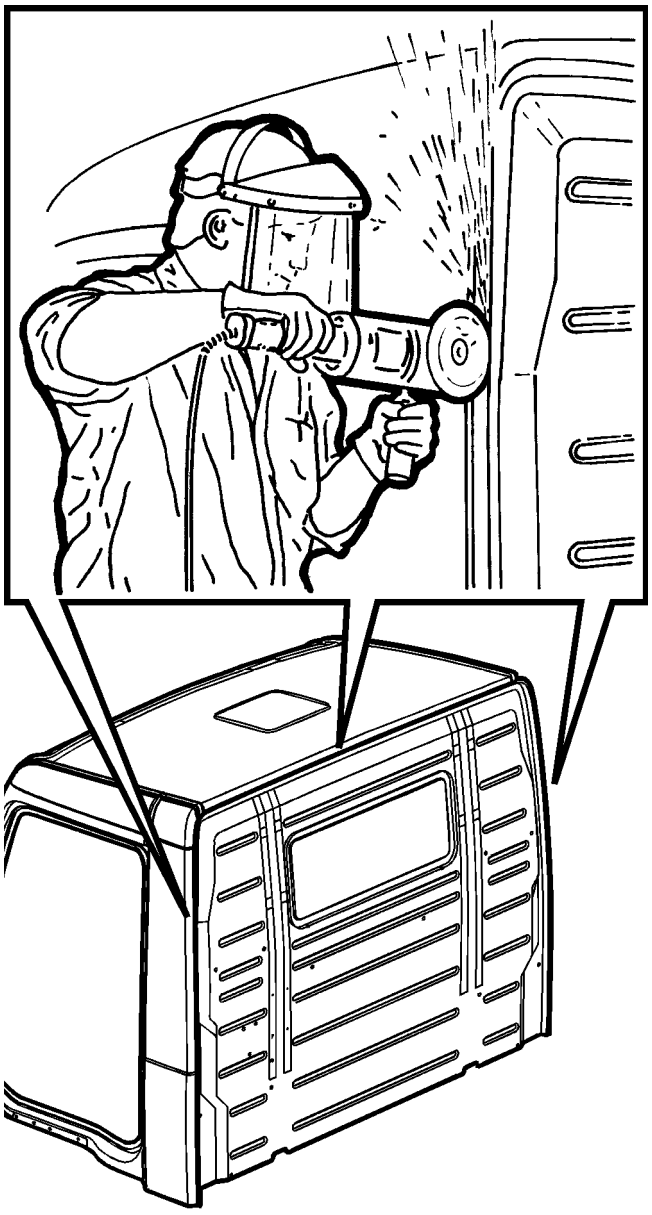
W8001509

The panel can be either spotwelded or plugwelded in place.

For plugweld: weld through the holes made when the panel was removed or see “MAG-Welding” page 23 for more information.

For spotweld: see “Frame Profile, Repair” page 25 for more information.

16

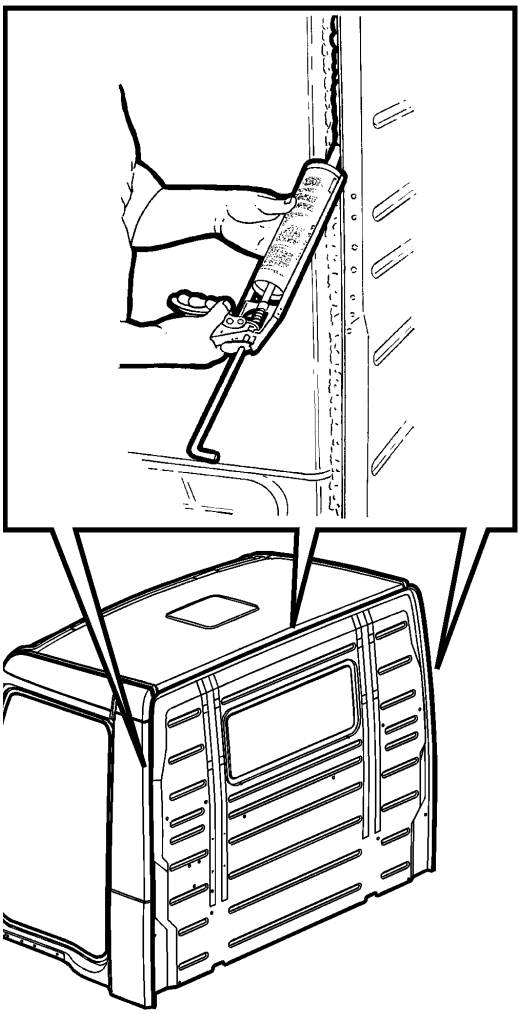


W8001507

If the panel was plugwelded, grind the welds until smooth. Do not grind off any material from the panel.

17
Put primer on all areas to be seam sealed. Let the primer dry for at least 15 minutes before applying seam sealer.

18



W8001508

Seal all joints and weld areas, inside and outside, with seam sealer.

19
Prepare surface for priming and painting. If needed, apply rustproofing on any inside surfaces or on the inside of profiles. For information on rustproofing procedures refer to:

Service Manual	Rustproofing Cab, VN, VHD
IMPACT	Function Group 182 Information Type: General ”Rustproofing Information”

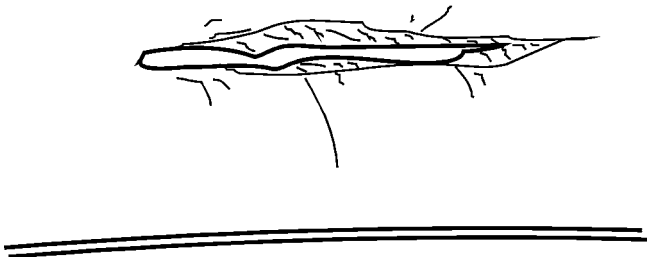
Body Panel, Repair (SMC)

DANGER

Before working on a vehicle, set the brakes, place the transmission in neutral and block the wheels. Failure to do so can result in unexpected vehicle movement and can cause serious personal injury or death.

SMC, although its appearance is similar to fiberglass, is not a conventional fiberglass panel. The repair techniques may be similar, but the composition of SMC and the materials used to repair it are quite different. At this time, only FUSOR® bonding materials have been approved and recommended for panel bonding, structural repairs and cosmetic repairs on the Volvo SMC, metton and telene panels. ***Fiberglass resin and ordinary polyester fillers should not be used. In time, the adhesion of these materials weakens and the repair will fail.***

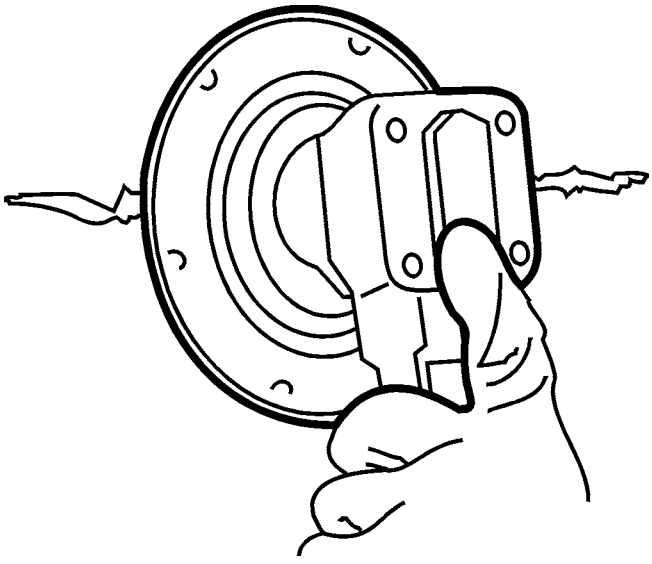
1



W8001815

Inspect the damaged area and clean out loose material. If damage extends completely through the panel, a backer panel will be necessary.

2



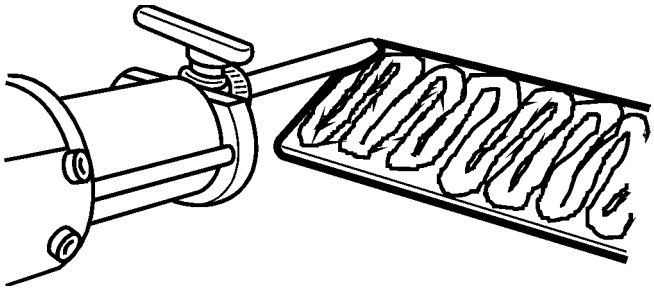
W8001816

WARNING

Use a respirator when sanding to protect lungs from foreign matter. Failure to follow these recommendations may result in personal injury.

Prepare the backer panel for bonding by scuffing the back side of the damaged area using a No. 80 disc on a sander.

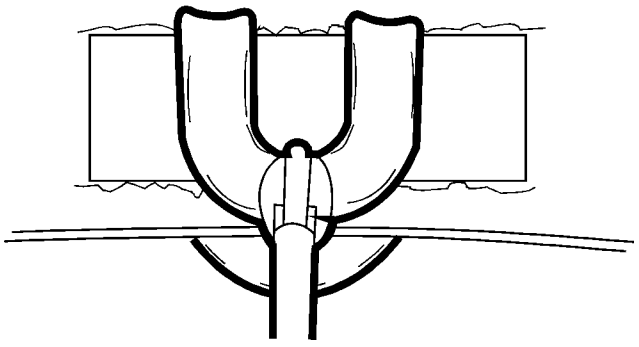
3



W8001817

The backer panel can be fabricated from a scrap piece of SMC or fiberglass reinforcement cloth saturated with FUSOR® T20, T21 or T10 adhesive. See Fusor® Materials in the following section “Cab Body, Special Equipment and Materials” page 13 for information on recommended adhesive. It should be large enough to cover the damage and approximately 50 mm (2 in.) to the sides of the damage. Apply FUSOR® repair adhesive to the backer panel.

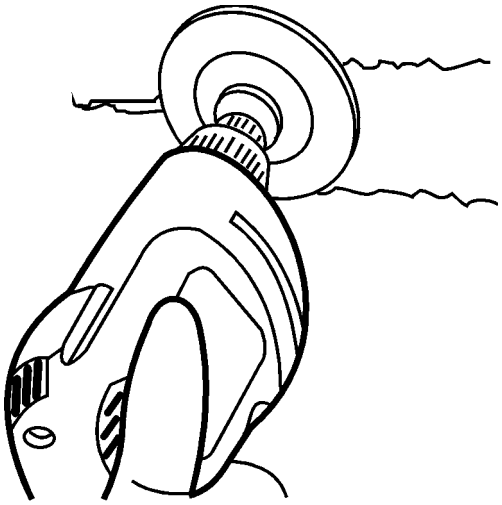
4



W8001818

Secure the backer panel on the reverse side of the damage. Allow the adhesive to set before continuing work. At room temperature, the adhesive will set in approximately 1 hour and will be completely cured in 24 hours. For faster set, use a heat lamp or heat gun to set the adhesive.

5



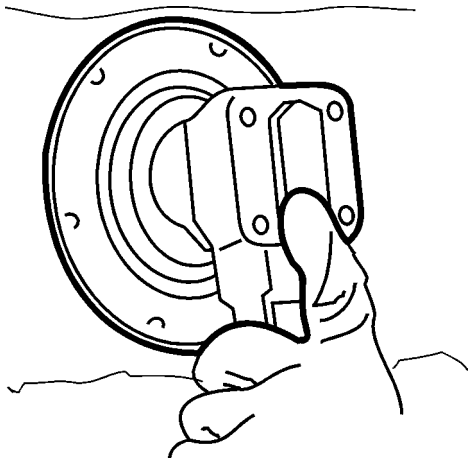
W8001819

⚠ WARNING

Use a respirator when sanding to protect lungs from foreign matter. Failure to follow these recommendations may result in personal injury.

On the outer surface, bevel the panel down on both sides of the damage using a No. 50 grit disc.

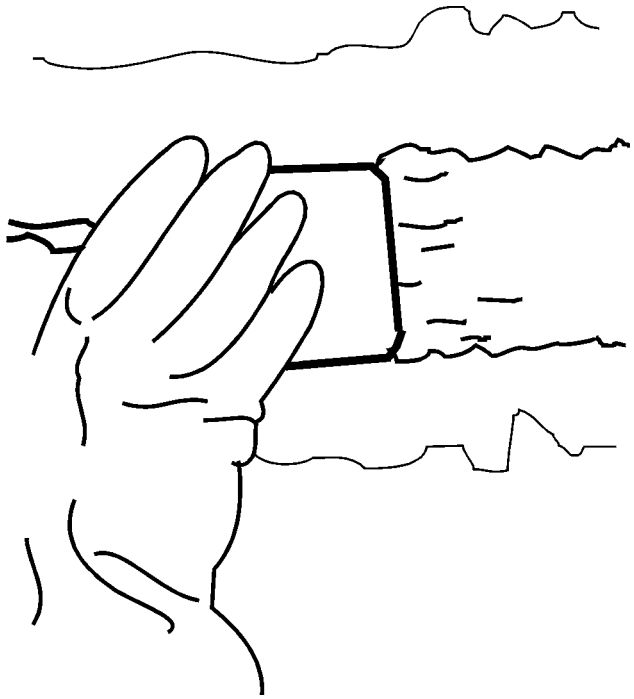
6



W8001820

Remove paint from the surrounding damage and feather out several inches.

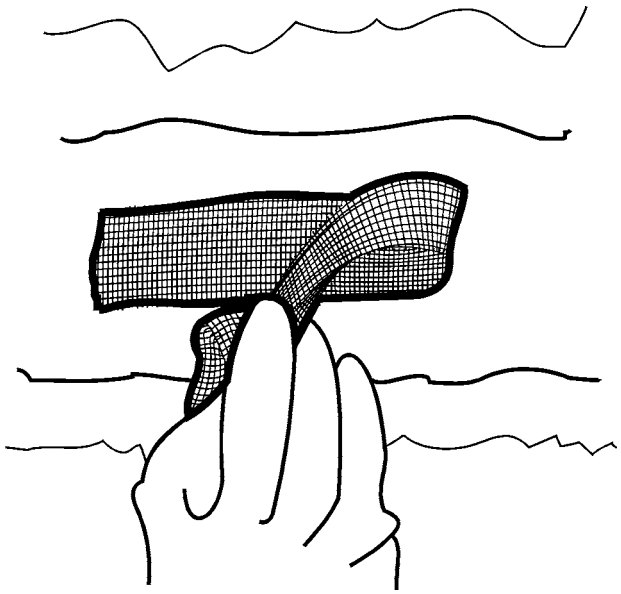
7



W8001821

Apply a light coat of FUSOR® repair adhesive. Spread out the adhesive.

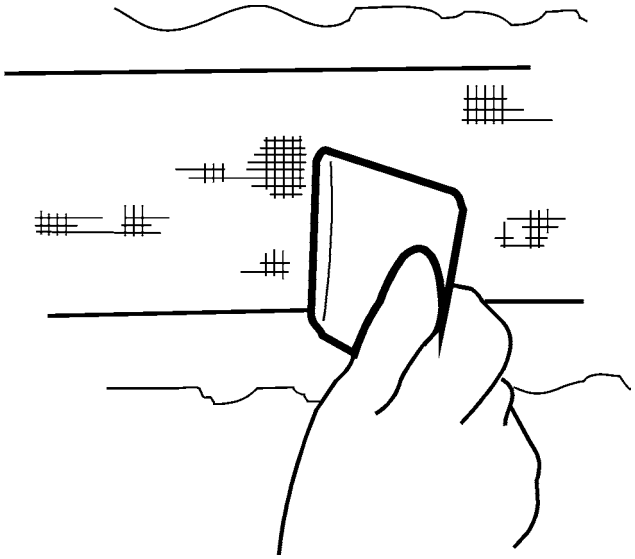
8



W8001822

Place a pre-cut piece of fiberglass reinforcement cloth onto the adhesive.

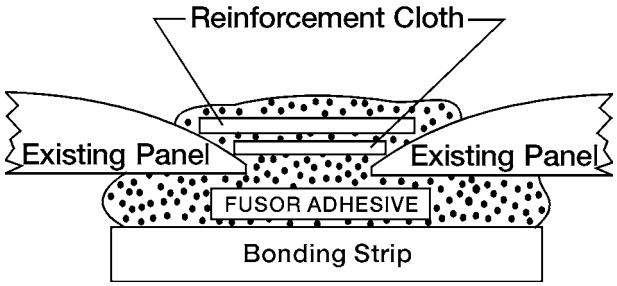
9



W8001823

Apply a second coat of FUSOR® repair adhesive. Use the applicator to work the adhesive into the cloth to remove all trapped air.

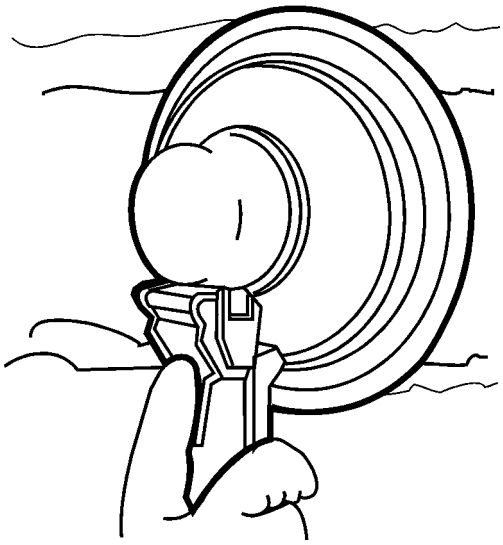
10



W8001824

Lay a second layer of reinforcement cloth over the second coat of FUSOR® adhesive. Work the air out and cover the area again with bonding adhesive. At room temperature, the new bond will set in approximately 1 hour and will totally cure in 24 hours. For better and faster curing, use a heat lamp and heat the bond to 80°C (180°F) for 60 minutes, then allow the bond to cool completely before working with it.

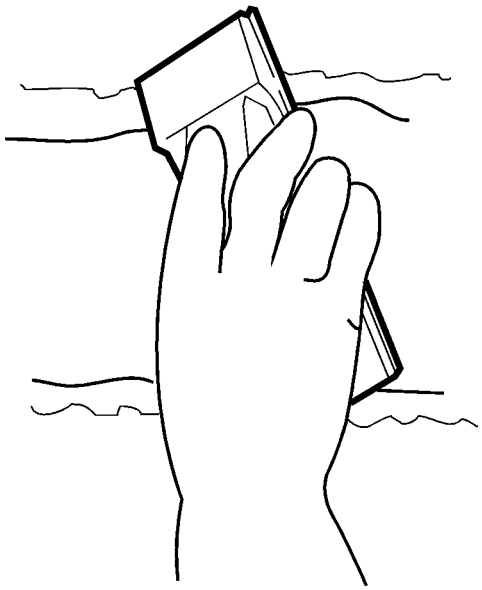
11



W8001825

Rough sand the area with a No. 80 grit disc and a sander.

12



W8001826

Using No. 220 to No. 320 grit paper, finish block sanding until the surface is smooth.

8121-03-02-02
Roof, Replacement (SMC)

DANGER

Before working on a vehicle, set the brakes, place the transmission in neutral and block the wheels. Failure to do so can result in unexpected vehicle movement and can cause serious personal injury or death.

WARNING

Personal injury hazard. Always wear safety goggles while using a heat gun and pry bar to remove scrap material. Failure to use safety goggles could result in damage to the eyes.

The cab roof replacement described in this procedure can be used in the 610 VNL, 660 VNM and 770 VN models.

Note: Some Body Shops may not be equipped to remove the top cap as a complete assembly. The following procedure demonstrates removal of the roof assembly in two sections. (Section one: The left side), (Section two: The right side).

Removal

1

WARNING

Always wear appropriate eye protection to prevent the risk of eye injury due to contact with debris or fluids.

Remove the rear top air fairing on the right and left sides of the cab. Remove the support brackets.

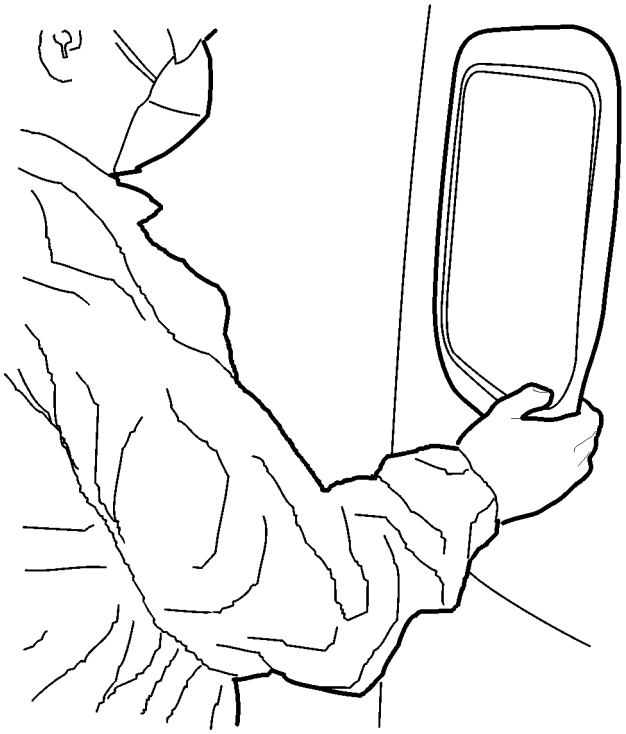
2

WARNING

Use a respirator when grinding to protect lungs from foreign matter. Failure to follow these recommendations may result in personal injury.

Remove the exterior sunvisor; disconnect wiring.

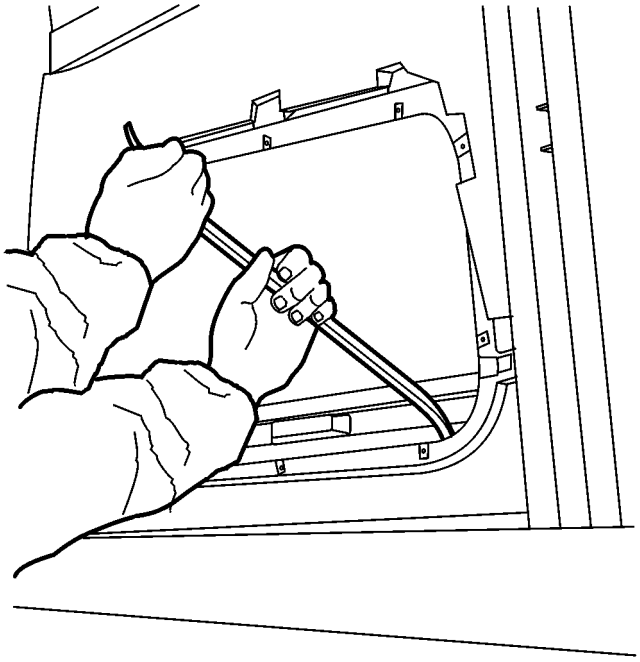
3



W8002811

Remove the side windows in the left and right sides of the window in the cab roof.

4



W8002812

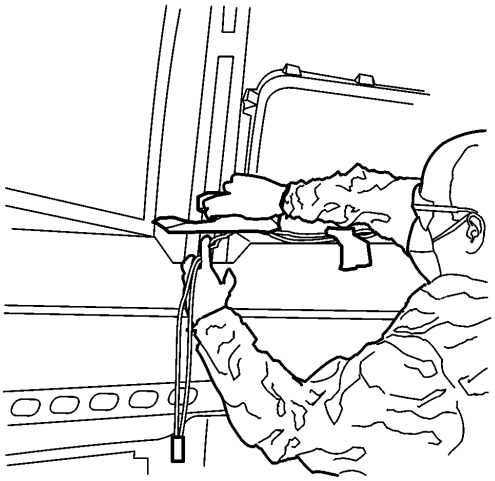
W8002828

Note: Possible need for use of a lubricant on the rubber molding around the window, to help with removal.
If the skylight is not damaged, refer to:

Service Manual Supplement 800-500 *Skylight Glass Replacement 770*

IMPACT Function Group 8439
Info Type: Repair
”Cab General, Cab Doors and Cab Glass – VN, VHD”

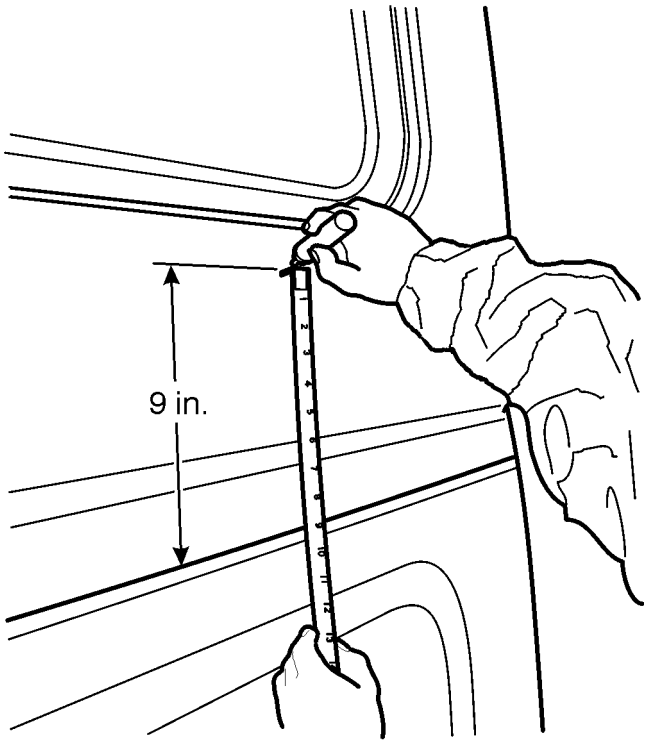
5



W8002814

Remove all wiring from the left and right sides of the cab roof. Remove any foam rubber.

6

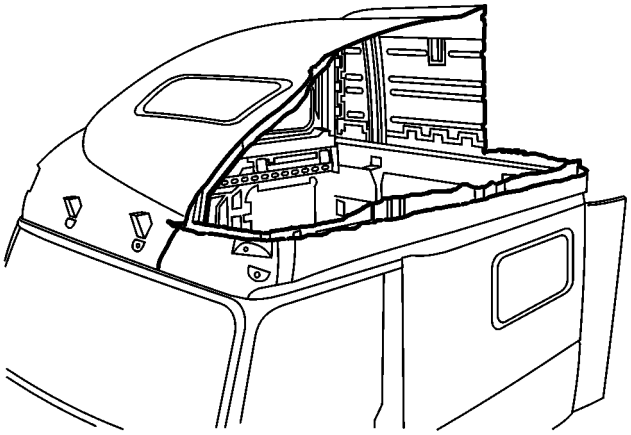


W8002813

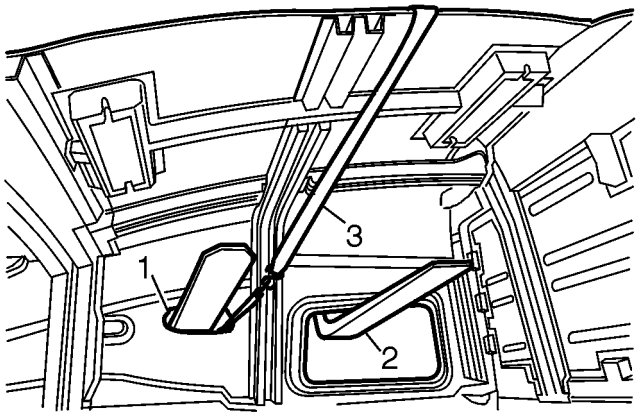
Draw a line starting 299 mm (9in.) from the base of the cab roof around to the bottom of cab roof.

Note: This will be your cutting line for the cab removal.

7



W8002815



W8002816

1 & 2 Forklift Forks

3 Lifting Straps

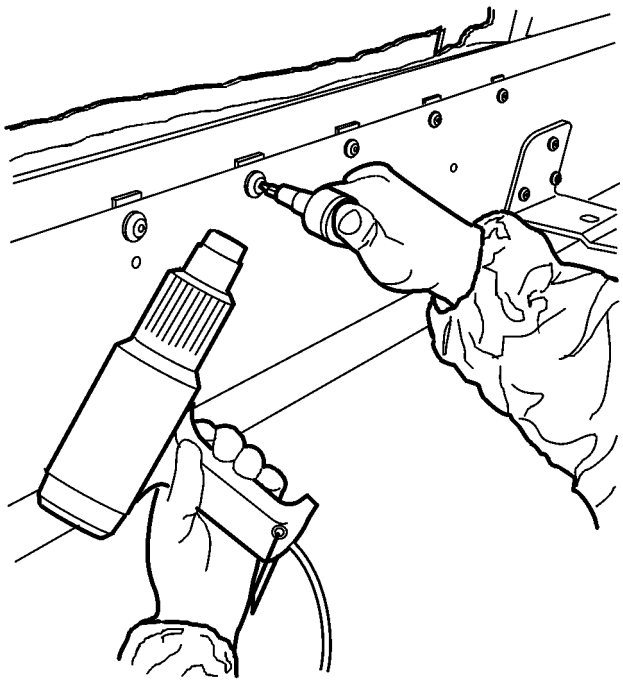
Remove one section of the cab roof at a time.

Note: Cut a hole 406 mm (16in.) from the opening of the window. Remove window with a forklift or “A” frame nylon lifting straps.

8

Repeat the previous step for removal of the right side of the cab roof.

9



W8002819

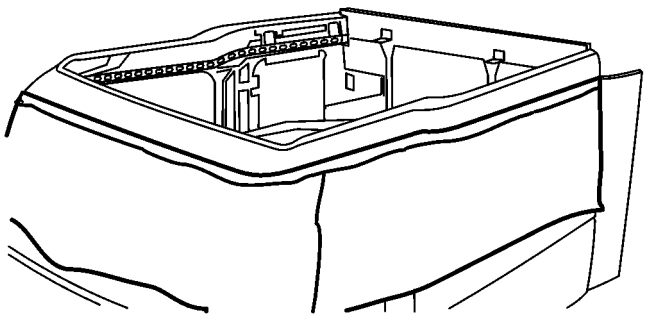
⚠ WARNING

Always wear appropriate eye protection, dust mask and gloves to prevent the risk of eye or skin injury due to contact with hot glue.

Remove supports and screws at the rear of the cab.

Note: You may need to heat the adhesive around the supports for removal. Do not discard the supports and screws they can be reused.

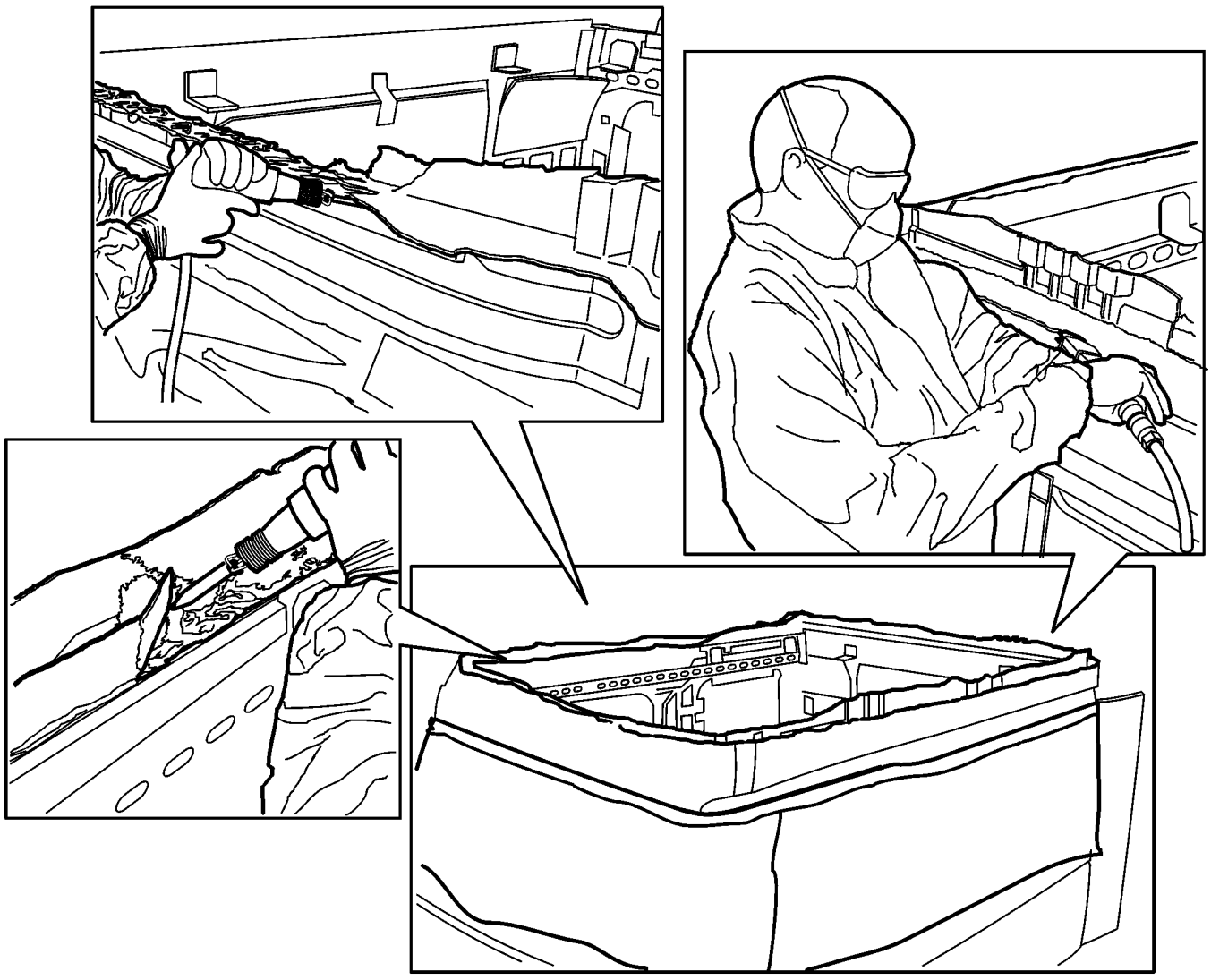
10



W8002820

Cover the top edges of the cab with paper, to protect it from debris.

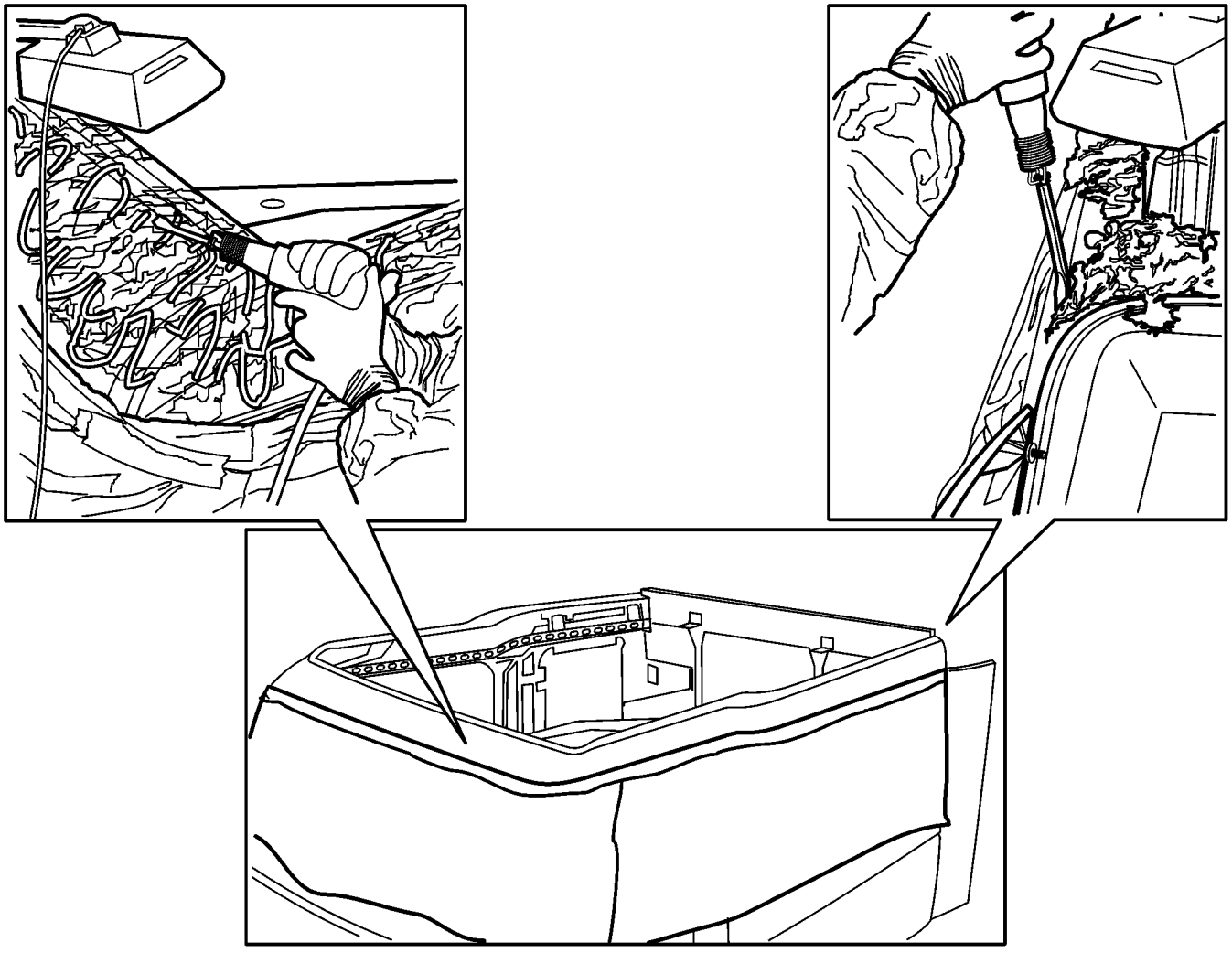
11



W8002817

Note: Heat the remainder of the top cap with the heat lamp and heat gun. Remove the remainder of the cab roof.

12



W8002818

Once the cab roof is completely off, remove the excess adhesive from the top of the cab.

13

WARNING

Personal injury hazard. Always wear safety goggles and a respirator while using a disc sander.

WARNING

Failure to use safety goggles may result in damage to the eyes. Failure to use a respirator may result in foreign material in the lungs.

Remove old paper and cover with new paper to protect paint from epoxy primer and sealer overspray.

14

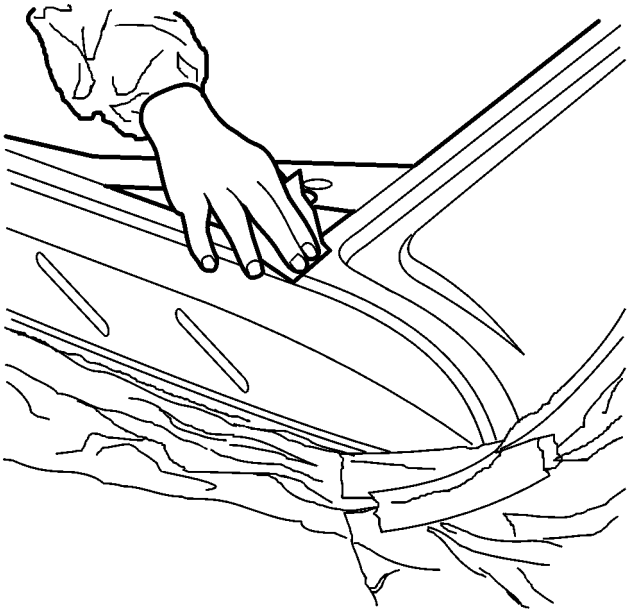
W8002821

WARNING

Use a face shield to protect eyes and face when gringing. Use gloves to protect hands from sharp metal edges. Failure to follow these recommendations may result in personal injury to eyes or skin.

Epoxy prime all bare metal, NIOSH approved respirator should be used for this step.

15



W8002823

WARNING

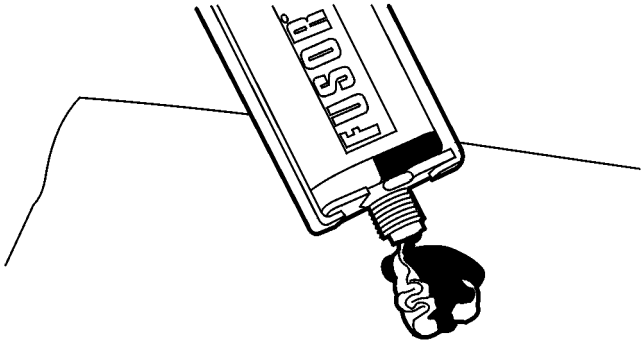
Use a respirator when sanding to protect lungs from foreign matter. Failure to follow these recommendations may result in personal injury.

Scuff primed area with 180 – 220 grit sandpaper, also scuff the bottom side of the roof cap with 80 grit sandpaper.

Installation

Adhesive Preparation

1



W8002604

FUSOR® Manufacturer's Warning:

⚠ WARNING

This product contains a chemical known to the state of California to cause Cancer.

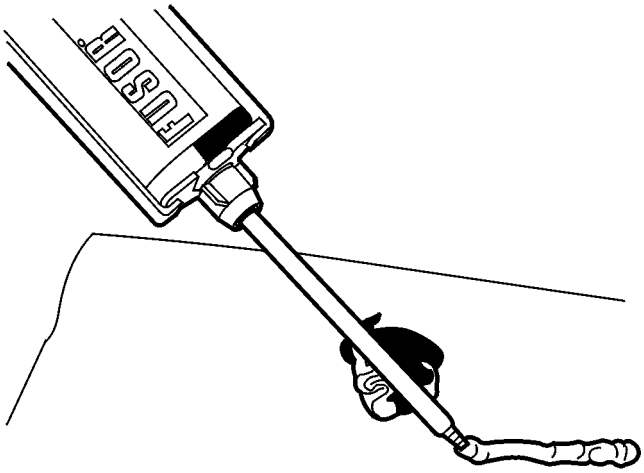
FUSOR® Manufacturer's Cautionary Information:

⚠ CAUTION

Before using FUSOR® adhesives refer to the specific material Safety Data Sheet (MSDS) for additional cautionary and safe handling information. If the MSDS is not in your files, please request one from Lord Regulatory Compliance at (814) 868–3611 ext. 3407.

Using the dispenser gun, P/N 304, 305 or 312, squeeze out a small amount of product from each side of the catridge to level the plungers and purge out air.

2



W8002614

Attach a mixing tip and dispense a small amount of adhesive, which is about the length and width of the mixer. Dispense until evenly mixed. This should be done with every tube used.

3

W8002824

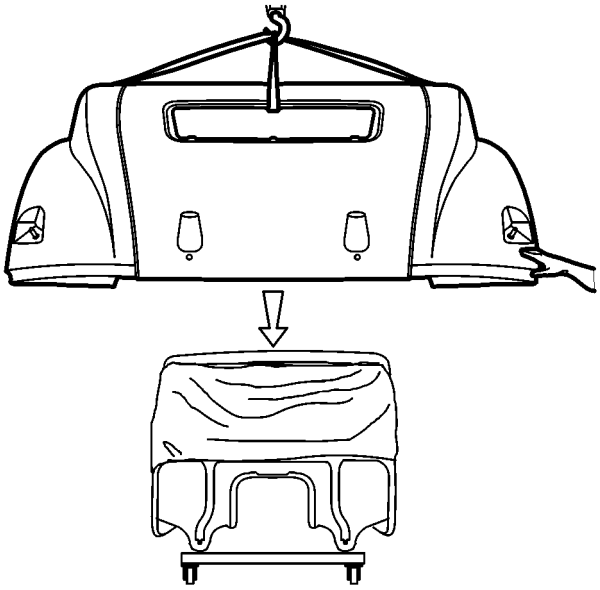
Apply T-20 or TF-24 FUSOR® to the primed surface of the cab.

4

W8002825

Note: See FUSOR® technical data sheet for cure time. The technical data sheet is enclosed with FUSOR® products when ordered.

5



W8002822

Move “A” frame in place and hook lifting straps to the top cap. Lift top cap up with “A” frame and move into position. Lower onto the cab.

Note: Make sure the top cap is seated completely and square on all four corners. Fork lift may be used if shop does not have an “A” frame.

6

Remove any excess adhesive. Remove paper when the FUSOR® is cured.

Note: See FUSOR® technical data sheet for cure time. The technical data sheet is enclosed with FUSOR® products when ordered.

7

Install the support screws at the rear of the cab. Tighten screws.

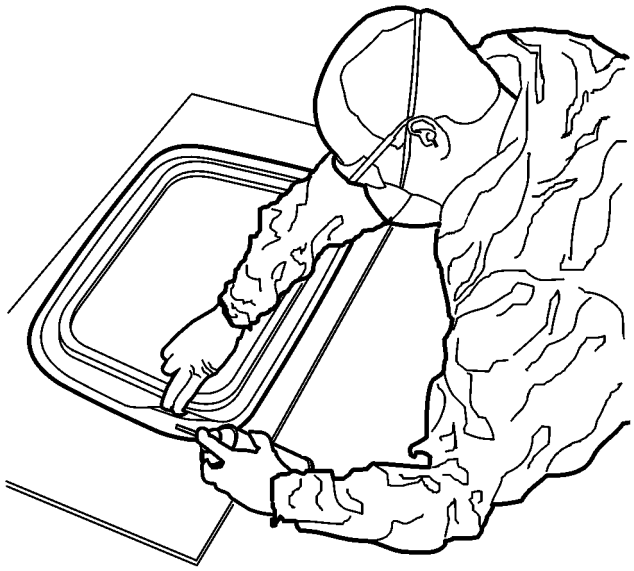
8

Install front sunvisor. Tighten screws.

9

Install rear left and right top air fairings and support brackets. Tighten screws

10



W8002826

W8002827

Install left and right top cap windows.
To install skylight refer to:

Service Manual Supplement	800–500 *Skylight Glass Replacement 770*

IMPACT	Function Group 8439 Info Type: Repair ”Cab General, Cab Doors and Cab Glass – VN, VHD”

Note: The repair time may vary depending on whether a forklift or an “A” frame is used.

Feedback

One of our objectives is that workshop personnel should have access to correct and appropriate service manuals where it concerns fault tracing, repairs and maintenance of Volvo trucks.
In order to maintain the high standards of our literature, your opinions and experience when using this manual would be greatly appreciated.
If you have any comments or suggestions, make a copy of this page, write down your comments and send them to us, either via telefax or mailing directly to the address listed below.

To

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Dept. 516 Service Publications

7900 National Service Road

P.O. Box 26115

Greensboro, NC 27402-6115

USA

Fax (336) 393-3170

From

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Comments/proposals

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Concerns Service Manual: .....

Operation Numbers

8121-03-02-02 Roof, Replacement (SMC) 39
8172-03-02-01 Rear Cab Panel, Replacement 28

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